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ABSTRACT

This activity book presents reading activities for grades 4-7 exploring the mysterious creatures of the deep sea. The creatures include: angel sharks; argonauts; barberfish; comb jelly; croakers; electric rays; flying fish; giganturid; lantern fish; narwhals; northern basket starfish; ocean sunfish; Portuguese man-of-war; sea cucumbers; sea snakes; stonefish; trunkfish; and viperfish. Each of the 37 selections has a brief description, a skills-check to determine reading comprehension, and an activity sheet. An answer key for the skills tests is included. (YP)

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A Good Apple Science Activity Book for Grades 4-7

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SCIENTIFIC ENCOUNTERS OF THE MYSTERIOUS SEA

Reading Activities That Explore the Mysterious Creatures of the Deep Blue Sea

BY LYNN EMBRY

ILLUSTRATED BY NANCY MCCLURE

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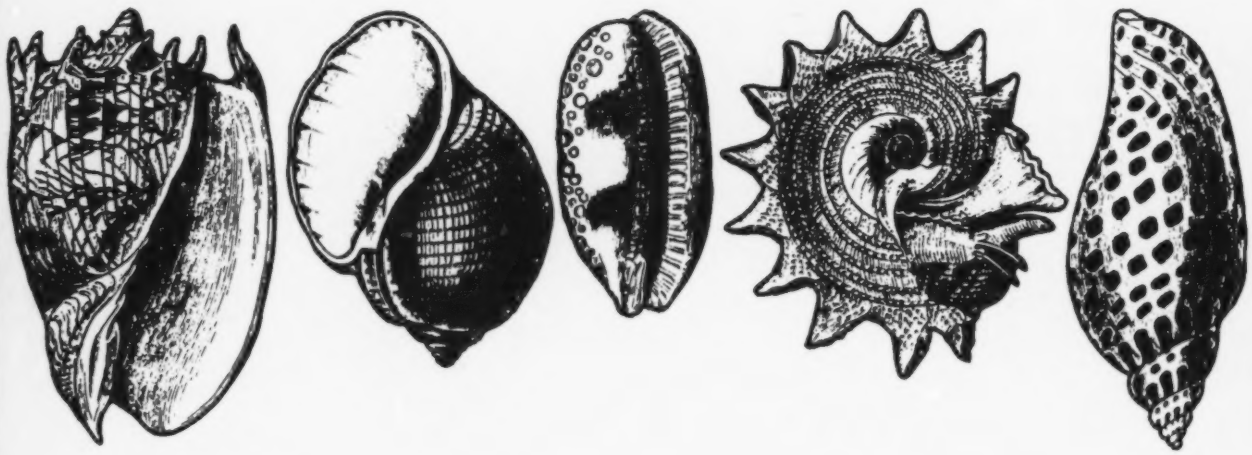
Scientific Encounters of the Mysterious Sea

Reading Activities That Explore the Mysterious Creatures of the Deep Blue Sea

by
Lynn Embry

Illustrated by Nancee McClure



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Contents

A World of Mysteries 1
Marine Mysteries 3
Angel Shark 4
Jagged Jaws 6
Argonaut 7
Critter Craze 9
Barberfish 10
Parasite Puzzler 12
Comb Jelly 13
A Glow from Below 15
Croaker 16
Sounds of the Sea 18
Electric Ray 19
A Shocking Experience 21
Flying Fish 22
Ocean Stumpers 24
Giganturid 25
Creatures of the Deep 27
Lantern Fish 28
A Fish Scrambler 30
Narwhal 31
Lookout for Whales 33
Northern Basket Starfish 34
An Adventure to Remember 36
Ocean Sunfish 37
A Fishy Name 39
Portuguese Man-of-War 40
Ocean Anagrams 42
Sea Cucumber 43
Mystery Creature 45
Sea Snake 46
Spooky Species 48
Stonefish 49
Sea Horse Cinema 51
Trunkfish 52
Trunkfish Treat 54
Viperfish 55
Ocean Wonders 57
Answer Key 58

Introduction

The oceans of the world are inhabited by thousands of species of creatures, many unusual and bizarre. Teeming with life, the oceans contain creatures vastly different in appearance, function, biological makeup, and ecological needs. Although countless life forms remain a mystery, scientists continue to unravel fascinating secrets of the deep. This book features some of the most intriguing ocean creatures known to man.

A consistent format is used in the presentation of each selection. An informational page about each ocean creature is followed by a skills check to determine reading comprehension, vocabulary, and dictionary skills. A related activity sheet accompanies every selection.

With such a vast population of ocean inhabitants to consider, only a minute sampling can be featured. It is hoped that the selections presented will captivate young explorers and spark an interest in further reading. Exciting discoveries await man as he continues his quest for knowledge of the oceanic world. By reading about the fascinating world beneath the oceans, learners may gain a greater understanding of the life forms with which we share our glorious planet.

A World of Mysteries

In an environment of darkness and mystique, the depths of the oceans harbor many strange, exotic creatures. Life forms not dependent upon sunlight exist at depths man cannot penetrate. Because of the tremendous pressure of water and the absence of light at great depths, exploring all the wonders of the oceans has been a physical impossibility. As technology helps man devise vessels capable of withstanding tremendous pressure, ventures deeper into the oceanic world are revealing fascinating information previously unknown to science.

Many new facts are being added to our knowledge of oceanic life. Fish previously unknown are being discovered. Ideas about the oceans are changing. New questions are being raised. The quest for knowledge is increasing.

It was once thought that the deepest parts of the oceans contained cold water. The theory was based upon the fact that sunlight cannot reach the lower depths to warm the water. New information reveals the presence of hot water in some locations caused by volcanic vents in the ocean floor. The vents release hot water and sedimentary materials. As man finds new ways to descend to greater depths, no doubt more discoveries will be made.

The oceans support fascinating creatures that man has only begun to understand. Many of the creatures have devised ingenious methods of survival. Some have evolved to resemble drifting kelp, floating seaweed, and crusted rock formations. Some rely on stealth, trickery, keen senses, and speed to survive. Others are parasitic, attaching themselves to a host for their most basic needs. Some produce their own light in a world without sunlight.

How are some creatures able to exist under the pressure of tons of water? Why do some species make a daily migration from lower to higher levels of the ocean? How do some creatures produce chemical light? How can man help preserve the balance of nature in the oceans? Perhaps these and other questions will be answered as man continues to unlock mysteries of the ocean through exploration and research.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. ocean explorations
   b. interesting ocean creatures
   c. unanswered mysteries of the oceans

2. Man has not explored the oceans fully because
   a. it is too expensive
   b. it is not worth the time
   c. it is impossible to survive at great depths

3. The floor of the ocean is sometimes heated by
   a. volcanic vents
   b. sunlight
   c. pressure

4. In the selection a word that means "enter" is
   a. penetrate
   b. descend
   c. evolve

5. A sea creature that moves with "stealth" is
   a. quick
   b. sly
   c. strange

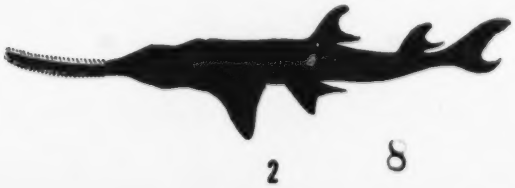
6. Circle the letter of the correct meaning of the italicized word in each phrase.

exotic creatures
a. familiar
b. unusual
c. simple

ingenious methods
a. clever
b. generous
c. careless

withstanding pressure
a. accepting
b. feeling
c. resisting

ventures deeper
a. aims carelessly
b. proceeds despite danger
c. continuously moves



Name _____

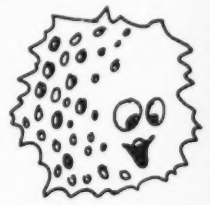
Marine Mysteries

Directions: Many strange and fascinating creatures inhabit the oceans. Some have secrets that man is only beginning to discover. Choose one of the creatures below and write a report about it. Share your information with the class.

1. dab: a fish with a left eye that travels over the top of its head to join the right eye
2. leafy sea dragon: a creature resembling drifting kelp
3. cone snail: a snail with a poisonous dartlike tooth that causes paralysis
4. skate: a flat bottom-feeder with eyes on top of the body
5. ragfish: a fish that collapses like a rag when out of water
6. whale fish: the largest known fish
7. coelacanth: a fish once thought to be extinct
8. crown-of-thorns starfish: the only known venomous starfish
9. sailfish: the fastest fish in the world
10. scorpion fish: a colorful, poisonous fish that feeds on large prey

Other topics:

killer whale	triggerfish	lungfish
cuttlefish	lionfish	batfish
porpoise	cowfish	needlefish
octopus	tiger shark	opah
snake eel	parrot fish	swordfish
giant squid	porcupine fish	puffer
loggerhead turtle	jellyfish	butterfly fish
trumpetfish	surgeonfish	barracuda
brittle star	sea fan	sand dollar
sea spider	spikefish	sponge
lamprey	jawfish	eagle ray
guitarfish	spineless dogfish	chimaera
goosefish	sea anemone	clingfish



Angel Shark

Sharks have a reputation for being dangerous, aggressive creatures of the ocean. Many deserve the reputation, but not all of the approximately 250 species are harmful to man. One particularly harmless shark is the angel shark. There are eleven species of the angel shark, none considered dangerous.

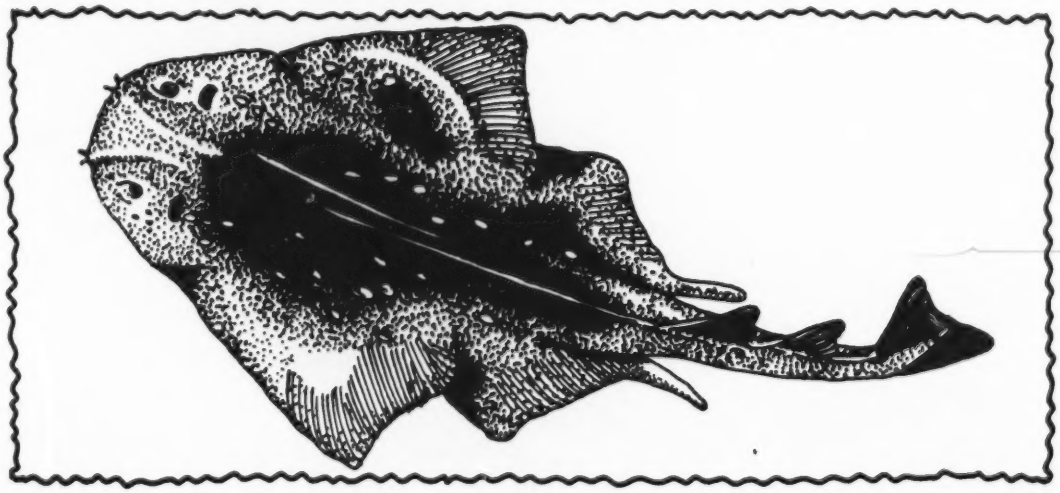
Swimming in warm, temperate waters and near the bottom of the ocean, the angel shark looks like a ray and a shark. Its broad, flattened head and body resemble a ray, but it is truly a shark. Its mouth is at the end of its body rather than on the undersurface as in most sharks. The gill openings are on the sides of its head. It has broad, wing-like pectoral fins and two small dorsal fins. The pelvic fins are large and flat. Behind each eye is a crescent-shaped spiracle. Prominent whiskers grow around its nose.

The angel shark, also known as the monkfish, may be gray, brown, or black on top and white underneath. The upper skin is usually splotched with dark spots and white lines. Most species of the angel shark only reach a length of about four feet. However, the largest angel shark, a European species called Squatina squatina, is about eight feet long and 150 to 160 pounds in weight.

Fishermen have been familiar with the angel shark for hundreds of years. Its rough skin, the texture of sandpaper, was once used for polishing wood and cleaning knives. The skin was also dried into a powder for curing skin ailments. The skin of the angel shark was even a popular dried food.

The angel shark is found along the coast of North America, South Africa, Japan, Korea, and Australia. It can sometimes be observed swimming, its tail moving from side to side. It lives in shallow water, but in winter it moves to deeper water. It returns to warm, shallow water to give birth in June or July.

Although the angel shark is no threat to man, out of the water its temperament changes. Fishermen who capture the angel shark soon discover its power as it thrashes its body about and snaps its jaws. Its sharp teeth remind fishermen they are dealing with a shark.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a harmless kind of ray
   b. a shark that resembles a ray
   c. a dangerous kind of ray

2. The angel shark has a
   a. round body
   b. slender body
   c. flat body

3. A word in the selection that means "mood" is
   a. temperament
   b. reputation
   c. temperate

4. A word that means "an opening for breathing" is
   a. fin
   b. spiracle
   c. head

5. Circle the letter of the meaning of the italicized word in each phrase.

aggressive creature	*prominent* whiskers	can be *observed*
a. ready to flee	a. noticeable	a. celebrated
b. ready to migrate	b. hidden	b. watched
c. ready to attack	c. fancy	c. caught

6. The following words were used in the story. Number the words in alphabetical order.

_____ spiracle	_____ splotched
_____ reputation	_____ ray
_____ shark	_____ resemble
_____ species	_____ reach
_____ swimming	_____ shallow

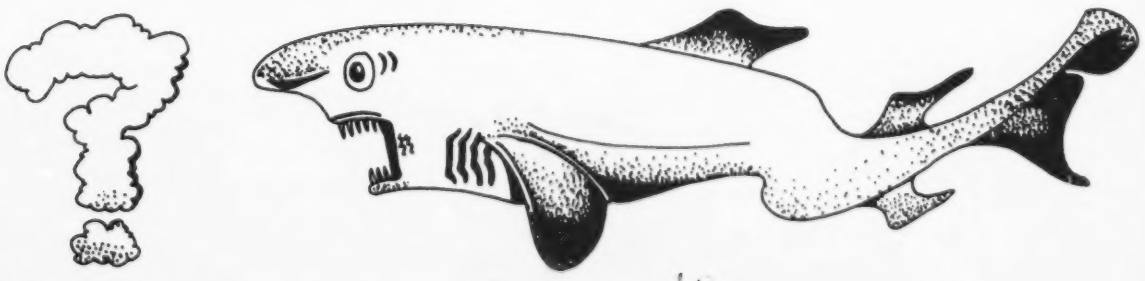
Name _____

Jagged Jaws

Directions: Whose jaws do sharks fear? Do you know the shark's only natural enemy? To find out, test your knowledge of sharks. Circle the letter in the true column if the statement is true. Circle the letter in the false column if the statement is false. The circled letters spell the answer. Write the letters in the blanks below.

True	False	
S	A	1. All sharks will attack man.
W	L	2. A shark is a poor swimmer.
A	H	3. A shark is a meat-eating creature.
A	R	4. A shark is unable to replace a lost tooth.
G	L	5. A shark's skeleton is made of cartilage.
E	O	6. The largest shark is the whale shark.
P	R	7. All sharks are shaped like torpedoes.
I	S	8. The shark is of no value to man.
H	R	9. A baby shark is called a pup.
A	T	10. A shark has more than one row of teeth.
N	R	11. A shark will not attack another shark.
K	A	12. A shark has a keen sense of smell.

Answer: _ _ _ _ _ _ _ _ _ _ _ _ _



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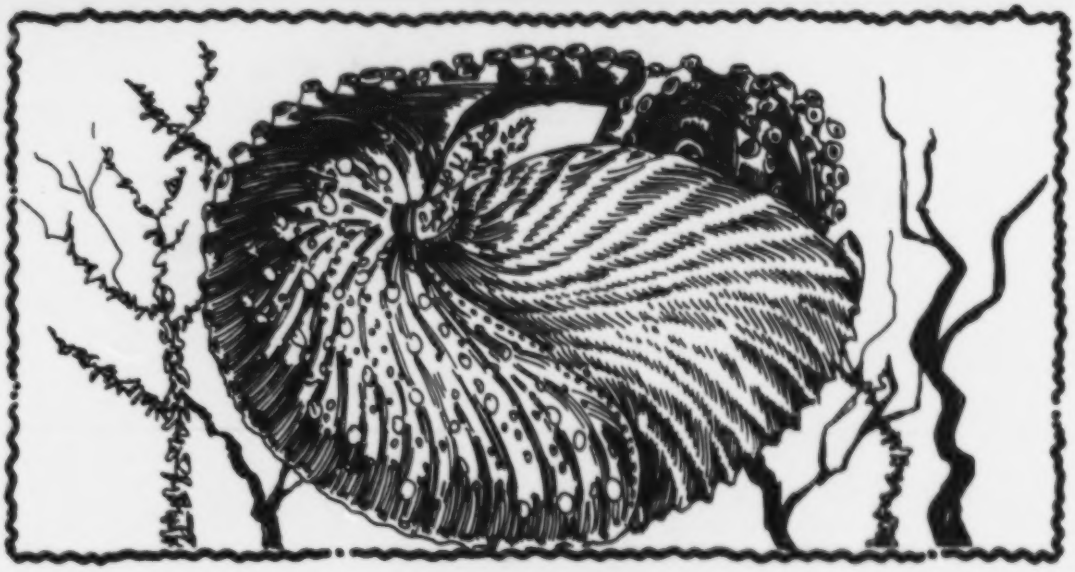


Argonaut

Have you ever heard of an octopus in a shell? Living in warm ocean waters throughout the world is a creature called the argonaut, or paper nautilus. Since it rarely washes ashore, it is not as familiar as other octopuses. Like its relatives, the argonaut has a soft body with eight arms. It has a pair of well-developed eyes on its head. The female has an external covering or shell that the male does not have. The shell of the female argonaut is actually a thin structure made by secretions from the first pair of the octopus's arms. It is used for hatching tiny eggs, but some believe it is also a place of retreat for the female.

Whenever the female argonaut leaves the delicate shell, it is only temporarily. It has been found that if the shell is taken away, the female will not survive very long. If the shell is broken, the female can repair it. The shell is thought to be an organ of buoyancy, using trapped air to allow the creature to rise and sink.

The argonaut is a mollusk similar to its relatives, but it is much smaller. Its skin may be reddish-brown, violet, green, or blue. The male argonaut is only a half an inch to an inch long, but the female is eight to ten inches long. The creature can eject a dark, inky substance when disturbed by other creatures. The fluid forms a protective cloud, enabling the argonaut to escape.

One fascinating feature of the argonaut is its ability to change color in less than a second. A web covering the argonaut's shell contains small sacs of color pigment that are connected to the creature's nervous system. By contracting muscles around the sacs, the argonaut stretches out the pigment onto a flat plate, making the color apparent. When the muscles relax, the color sacs contract, and the color is not as distinct.

Swimming along the surface of the ocean, the argonaut feeds on small fish and sea butterflies. It swims by forcing water through a siphon, a tube-like organ beneath the head. When it swims too near a sailfish, it must flee quickly or it may become a meal itself.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a kind of octopus
   b. a sea butterfly
   c. a colorful shell

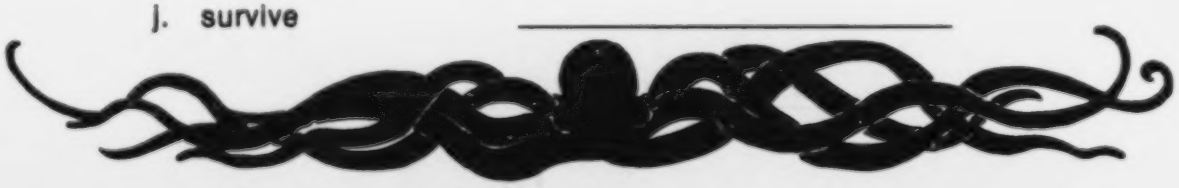
2. The external shell belongs to
   a. the male argonaut
   b. the female argonaut
   c. both male and female argonauts

3. A word in the selection that means "release" is
   a. retreat
   b. flee
   c. eject

4. A word that means "for a limited time" is
   a. rarely
   b. temporarily
   c. distinct

5. Divide the following words into syllables. Draw a line under the syllable that receives the primary stress.

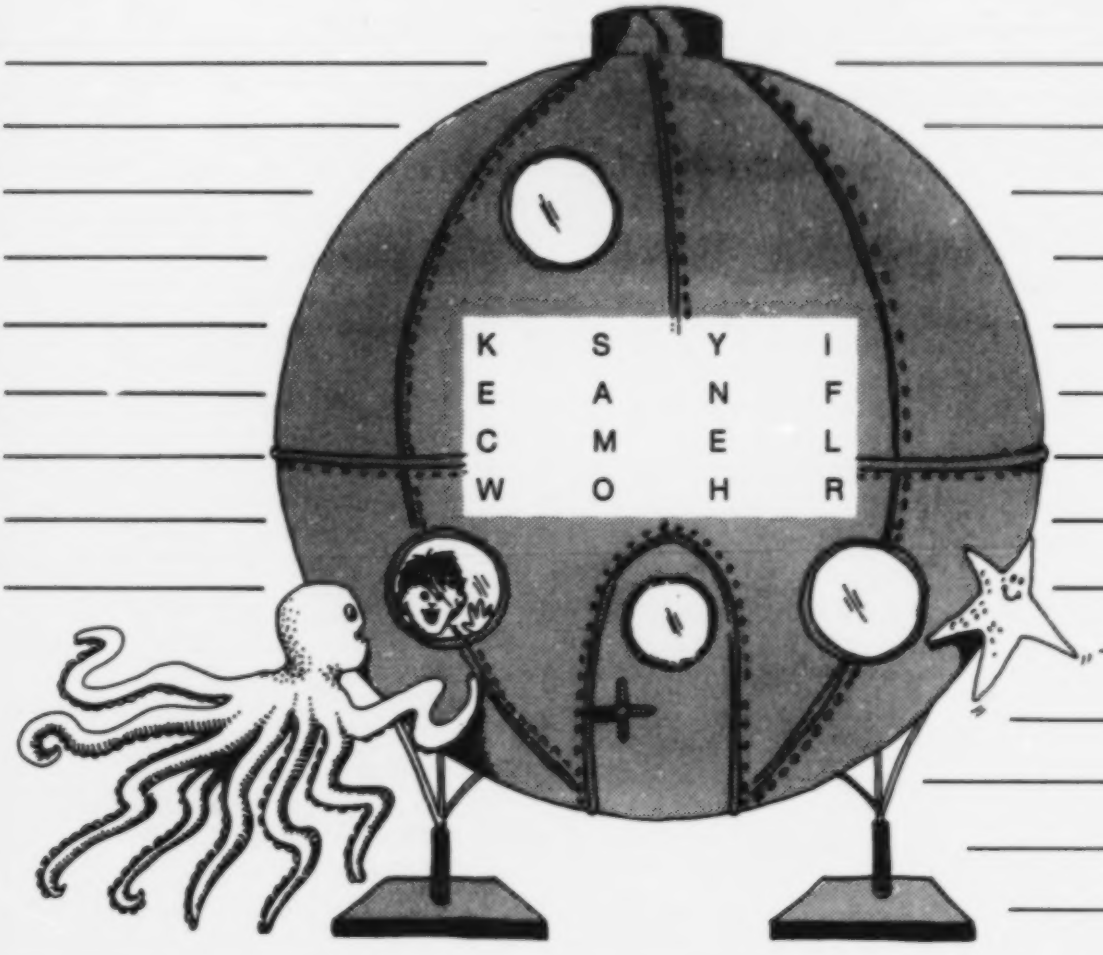
   a. octopus _____
   b. mollusk _____
   c. feature _____
   d. muscles _____
   e. similar _____
   f. nervous _____
   g. substance _____
   h. contract _____
   i. secretions _____
   j. survive _____



Name _____

Critter Craze

Directions: While exploring the ocean in a bathysphere, you may see many interesting creatures. Keep your eyes open, for the ocean is full of surprises. Use the letters below to spell as many sea creatures as possible. Write your findings below.



Number of Words: _____

1—5	Making discoveries
6—8	Observant
9—4	Sharp eyes
15—20	Expert

Barberfish

When fish need special grooming, where do they go? Some seek the cleaning services of the barberfish. The barberfish is classified by its behavior rather than body structure. Many fish species have barber or cleaner fish among them. The best known are the wrasses, the surgeonfish, the pilotfish, and the gobies.

The barberfish performs a beneficial service to other fish. It removes parasites, fungi, and bacteria from their bodies. Fish are very susceptible to infections, particularly when the skin is punctured. The barberfish helps other fish enjoy improved health by ridding the customers of troublesome parasites and bacteria.

Grooming relationships have been observed in many fish species in tropical and temperate waters. Sometimes the barberfish sets up shop in a particular location. It may be near a brightly colored rock, a coral reef, a sandy area, or some other distinctive landmark. Sometimes it appears to be more mobile.

Fish seem to enjoy the grooming services of the barberfish. They will patiently allow the barber to clean their bodies, even enter their mouths and gill chambers. They will lift their fins and let the barber work on infected wounds. Many species seek out the services of the barber. Deep-sea fish have been known to enter more shallow water where the barberfish can remove its parasites. Fish have even been observed waiting in line for a turn with the barberfish.

When the barberfish is removed from its established territory, the effect is dramatic. Within only a few days many fish desert the area. After a couple of weeks very few fish remain. Usually those that linger are in poor health with serious infections. When the barberfish is returned to the location, the other fish come back for grooming.

Performing a cleaning service offers the barberfish an easy meal, but there are risks to the customer. The fish that is being cleaned must be careful in selecting a suitable barber. There are fish that mimic the barberfish, carrying the grooming service a step further. Instead of merely removing parasites, they make a meal of the unsuspecting customer!

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a fish that threatens other fish
   b. a fish that cleans other fish
   c. a fish that infects other fish

2. The barberfish
   a. causes parasitic infections
   b. attacks unsuspecting fish
   c. performs a valuable service

3. A word in the selection that means "not able to resist something" is
   a. unsuspecting
   b. susceptible
   c. mobile

4. A synonym for "helpful" is
   a. distinctive
   b. dramatic
   c. beneficial

5. Write the correct word for each phonetic spelling.
   a. shăl′ - ō _____
   b. grŭm′ _____
   c. kəp′ - əl _____
   d. spĕsh′ - əl _____
   e. bĭ - hā′ - vyər _____
   f. dĭ - zərt′ _____
   g. băk - tĭr′ - ē - ə _____
   h. strək′ - chər _____

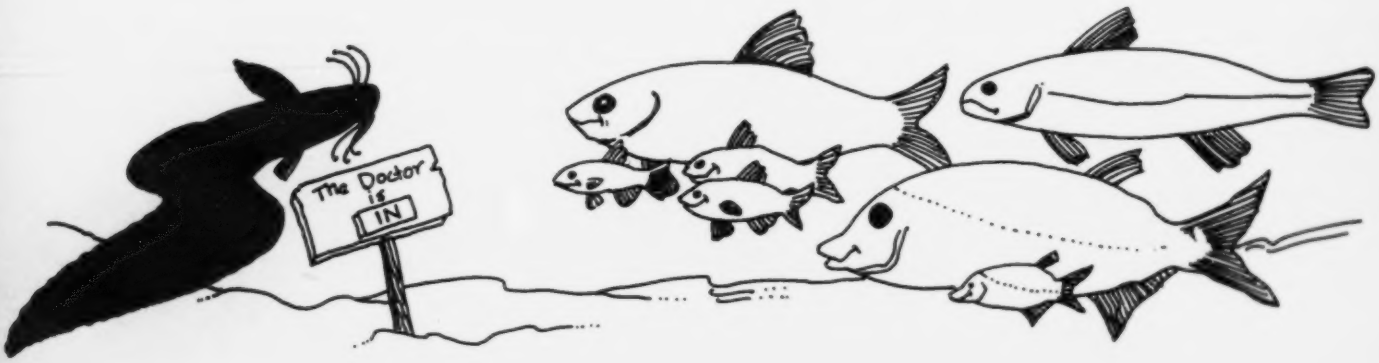
Name _____

Parasite Puzzler

Directions: Not all parasites can be removed by the barberfish. One parasite lives inside the sea cucumber. Do you know its name? To find out, circle the letter in the first column before each true statement. Circle the letter in the second column before each false statement. The circled letters spell the answer.

True	False	
S	T	1. The barberfish is a parasite.
H	W	2. A parasite lives on a host.
O	E	3. Parasites make fish healthy.
L	P	4. Parasites cannot live in salt water.
E	K	5. Fish are easily infected by bacteria.
F	A	6. Ocean fish are free of parasites.
R	I	7. Many fish have parasites.
L	S	8. There are phony barberfish in the ocean.
H	F	9. There is only one kind of barberfish.
I	R	10. Some fish seek out the barberfish.
A	S	11. The services of the barberfish are of no value.
Y	H	12. Parasites do not harm fish.

Answer: ___ _____



Comb Jelly

Lighting oceans of the world with tiny flashes of blue and green light is a small transparent sea creature called the comb jelly. The comb jelly, also known as a "sea walnut" and a "sea gooseberry," is one of more than eighty species of Ctenophora. It is a delicate creature with a jelly-like body composed of two layers of cells separated by a noncellular layer. It is almost invisible in the water. The creature has an internal digestive cavity and eight rows of combs on its outer body. It swims by moving the fringed combs of cilia, relying on balancing organs to keep it in an upright position.

The comb jelly gives off light with its eight combs. The luminescence flashes on and off, creating spectacular effects in the water. The light is a cold light known as biochemiluminescence. Scientists do not fully understand how the creature produces light.

The comb jelly is a carnivorous animal. It preys on small fish, plankton, worms, crustaceans, and other small creatures. Using a pair of tentacles, the comb jelly grabs its prey. The tentacles contain sticky cells that hold the victim until it is drawn into the mouth of the comb jelly. The food is partly digested in the pharynx before entering the digestive cavity. The digested food is then absorbed by body cells.

The comb jelly is usually found in coastal regions, but it also appears at great depths in the oceans. It swims slowly with its mouth held upward and the comb plates moving back and forth. When descending to deeper water, the mouth end of the comb jelly leads the way. When in a resting position, the comb jelly appears to be suspended with its mouth toward the surface of the water.

Sometimes a group of comb jellies may wash ashore. They look like glistening balls of jelly in the sunlight. Some fishermen call them "cat's eyes." If they have not been out of the water long, they will revive and swim away when carefully placed back into the ocean. Tiny, colorful flashes of light may once again be seen in the water as the comb jelly returns to its natural surroundings.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a transparent sea animal
   b. a jelly-like plant
   c. a blue and green fish

2. The comb jelly is
   a. parasitic
   b. carnivorous
   c. herbivorous

3. A word in the selection that means "a hollow space" is
   a. comb
   b. mouth
   c. cavity

4. A word that means "going down" is
   a. descending
   b. suspended
   c. entering

5. Circle the letter of the correct meaning of each italicized word.

internal cavity	*spectacular* effects	*delicate* creature
a. inside	a. speckled	a. sticky
b. dark	b. dramatic	b. fragile
c. open	c. ordinary	c. delicious

6. Circle the accented syllable in each word below.

a. invisible	e. natural
b. flashes	f. scientists
c. jelly	g. relying
d. digested	h. ashore

Name _____

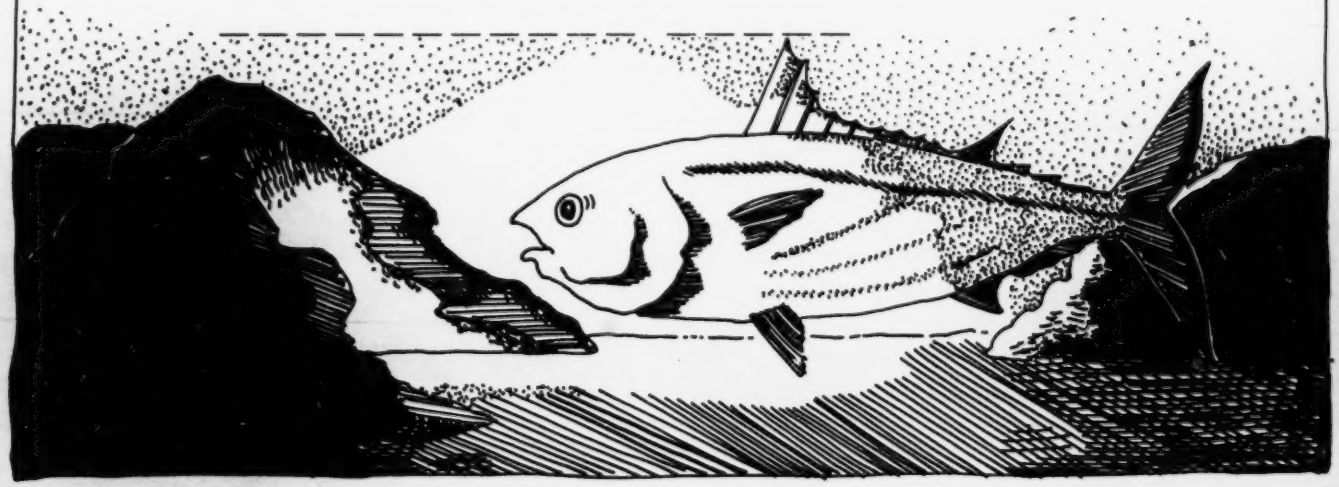
A Glow from Below

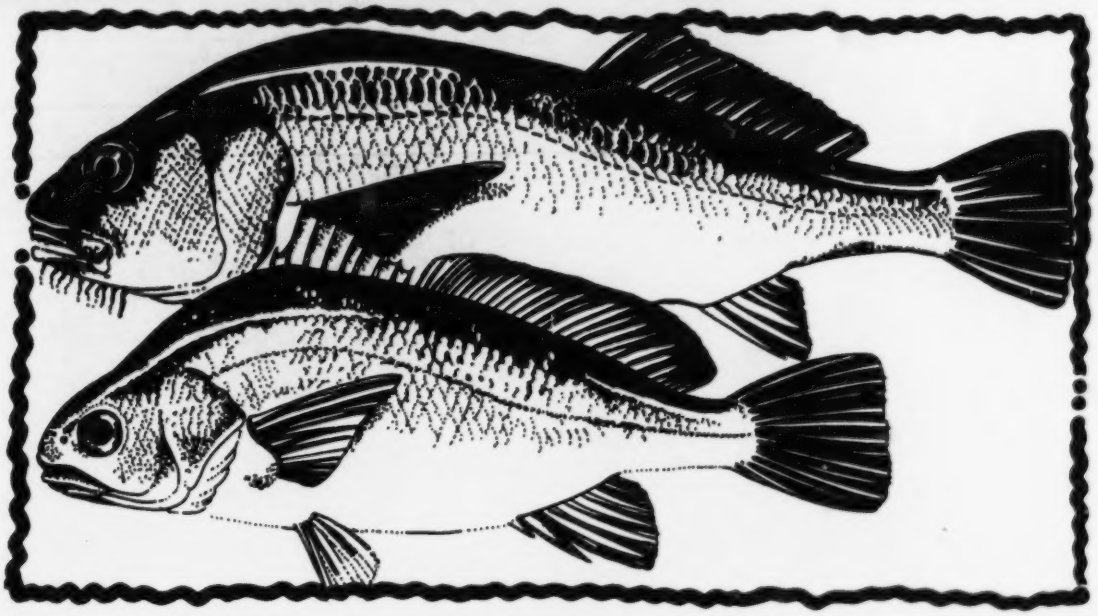
Directions: The comb jelly is only one of many ocean creatures that gives off chemical light through biochemiluminescence. Other sea creatures glow by a different process. Follow the directions below to discover something in the ocean that has a different kind of glow.

BIOCHEMILUMINESCENCE

1. Mark out the last four letters in the word above.
2. Change the 4th and 13th letters to the letter *O*.
3. Change the 5th and 14th letters to the letter *R*.
4. Change the 2nd and last letters to the letter *L*.
5. Change the last consonant to the letter *A*.
6. Change the 7th letter to the letter *S*.
7. Change the 4th vowel to the letter *C*.
8. Change the 11th letter to the letter *T*.
9. Change the 3rd letter to the letter *U*.
10. Change the 9th letter to the same as the 6th letter.
11. Change the letter after the 4th vowel to the letter *N*.
12. Change the 5th vowel to the letter *C*.
13. Change the 1st letter to the letter *F*.
14. Write the letters in order in the blanks to spell the answer.

_ _





Croaker

The croaker, or drum, is known as the noisemaker of the sea. Actually, there are about 160 species in the croaker family. Recognized by the sounds it makes, the croaker has even tricked submarine operators into thinking enemy craft was in the vicinity. After locating the origin of the sound, the submarine operators were able to hide their own operational noises behind schools of croakers.

The croaker is a carnivorous fish that inhabits warm, shallow oceans near most continents. It is brownish-gray with a scaly head and a rounded snout. It has a pair of dorsal fins that almost touch. The average croaker weighs only a few pounds, but some species exceed one hundred pounds.

The Atlantic croaker (Micropogon undulatus) is one of the best known members of the croaker family. It weighs from one to four pounds. It ranges from Massachusetts to the southern tip of South America.

For a long time it was thought that fish made no sound. The croaker, however, has disproved that notion. The fish voluntarily produces the sounds by tightening the muscles of its swim bladder. This creates vibrations which it amplifies with the cavity of its bladder. By contracting and relaxing, the muscle acts much like a guitar string. The sounds have been described as humming, drumming, croaking, whistling, and purring.

Scientists are not sure why the croaker makes such sounds. In some species only the male makes the sounds, but in other species both male and female croakers produce the noises. It has been noted that the noise is greater during spawning season. The intensity of the sound also varies during the day and night. The croaker has been known to gather in large schools and begin the noisemaking in the early evening, reaching its peak just before midnight.

Some croakers do not have swim bladders and cannot make the noise. However, they do their best to keep up with their fellow croakers. They join in by grinding their teeth together.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The story is mainly about
   a. a tricky fish
   b. a noisy fish
   c. a scaly fish

2. The croaker
   a. eats other fish
   b. avoids other fish
   c. frightens other fish

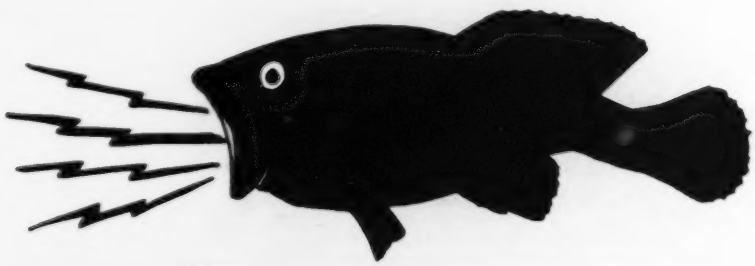
3. A word in the story that means "the surrounding area" is
   a. dorsal
   b. origin
   c. vicinity

4. In the story a word that means "makes louder" is
   a. amplifies
   b. ranges
   c. produces

5. A synonym for "source" is
   a. notion
   b. origin
   c. cavity

6. If the guide words on a dictionary page are "scale" and "seal," place an X in the blank by each word that should appear on the same page.

_____	1. species	_____	6. scaly
_____	2. submarine	_____	7. snout
_____	3. sea	_____	8. spawning
_____	4. shallow	_____	9. scientists
_____	5. schools	_____	10. season



Name _____

Sounds of the Sea

Directions: Since sound does not easily pass from water to air, it was some time before it was known that fish and other sea animals make noises. Now it is known that many undersea creatures utter a variety of sounds. Since they do not have vocal cords, the sounds must be made by using other body parts. How many noisemakers can you find in the puzzle? You may look horizontally, vertically, and diagonally. Circle your answers.

K W U S V X D P T S C I U F M D S R D M
W H O Z D L G X W O X H E R N O X A T R
X S V G V Q C H X H S B B F K L H I R I
O D O A C S S V V I A F F C Q P F U I B
F I L E F I S H F C K L A R L H F C G A
I P R U Z W L D R V R B E Z O I R U G A
K O J A D M A G Z I E O P B B N U H E D
S R P J T O P Q F L M W A N S J A U R J
U P Y Q T T Y U K H A P Z K T H F S F A
N O H M K F A C K A D B X Q E S S N I N
F I V E I S I I D Q Q I S D R R M G S H
I S B E P T B H L M R N L L Q Z F Q H V
S E E G S D J H X Y I A S D X T B F P J
H P P M R K N B P D K R V F X N C H T A
F R Z S K U E J R A F L E Z F K G W A R
H A X W K K N A T G I M C E Y Y G V Z P
N W B Z I V N T P A C L E W T D C C Y W
Z N V E Z R K N P E Q H B Z M L A E M H
B K P L U D G D T F J Y E R H K C I E G
E O L G L Y X S H U I I V J S U A P M K

Word Bank

whale	dolphin	porpoise	shrimp	grunt
prawn	croaker	sunfish	toadfish	triggerfish
gurnard	rattail	stickleback	filefish	lobster

Electric Ray

The electric ray has fascinated man since the days of the early Greeks. Its ability to discharge an electric current was not understood until the 18th century. For a long time it was thought that the electric ray drugged its prey, but now it is known that it sends out electric shocks. It can discharge as much as 200 volts of electricity.

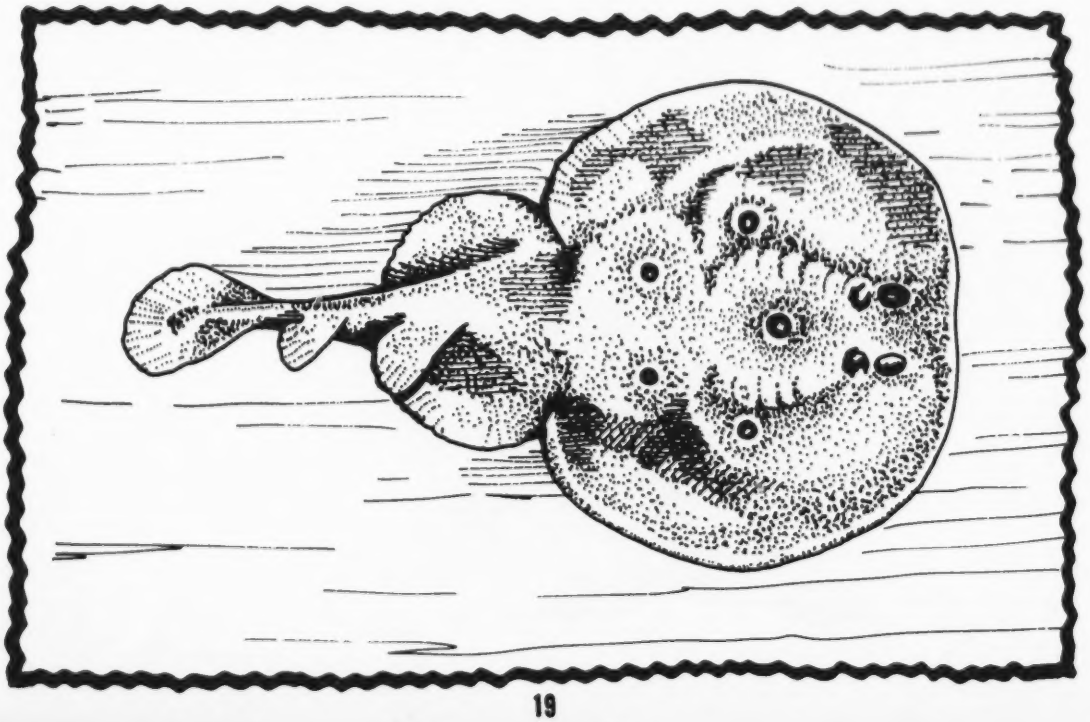
Long ago the Romans used the electric ray for medicinal purposes. They placed the torpedo species across the feet, legs, and heads of those suffering with gout and headaches. It is said that the practice started when Emperor Tiberius accidentally stepped on a torpedo ray and discovered the shock relieved his gout symptoms. This appears to be the beginnings of electroshock therapy.

There are about thirty-six species of the electric ray. The largest is Torpedo nobiliana, a disk-shaped creature weighing 200 pounds. It is about five feet long. It has small eyes and a small mouth. Other species are similar except not as large.

The electric ray is found in all tropical and temperate seas. It lives at depths of 2,000 to 3,000 feet. It spends its time hiding in the sand and feeding along the ocean bed.

The ability to produce an electric shock is useful to the electric ray. It helps it to obtain food as well as protect it from enemies. The electric ray has two large electric organs on each side of its head. It captures its prey by pouncing on it and discharging an electrical current. It wraps its pectoral fins around the victim and proceeds to eat it.

Scientists do not fully understand how the organs of the electric ray become charged. They know the voltage is discharged in a series of short pulses. The voltage weakens with repeated attacks. Several days are necessary for the electric ray to build up its reserve of electrical power.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a fish that cures gout
   b. a creature that produces an electric current
   c. a creature that drugs its prey

2. The electric ray
   a. attacks with an electric shock
   b. grows stronger with each attack
   c. seldom attacks its prey

3. A word in the selection that means "stock" is
   a. reserve
   b. charge
   c. power

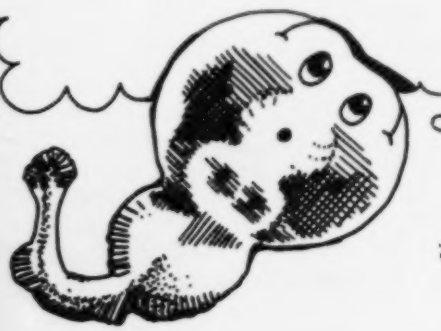
4. A synonym for "release" is
   a. discharge
   b. produce
   c. obtain

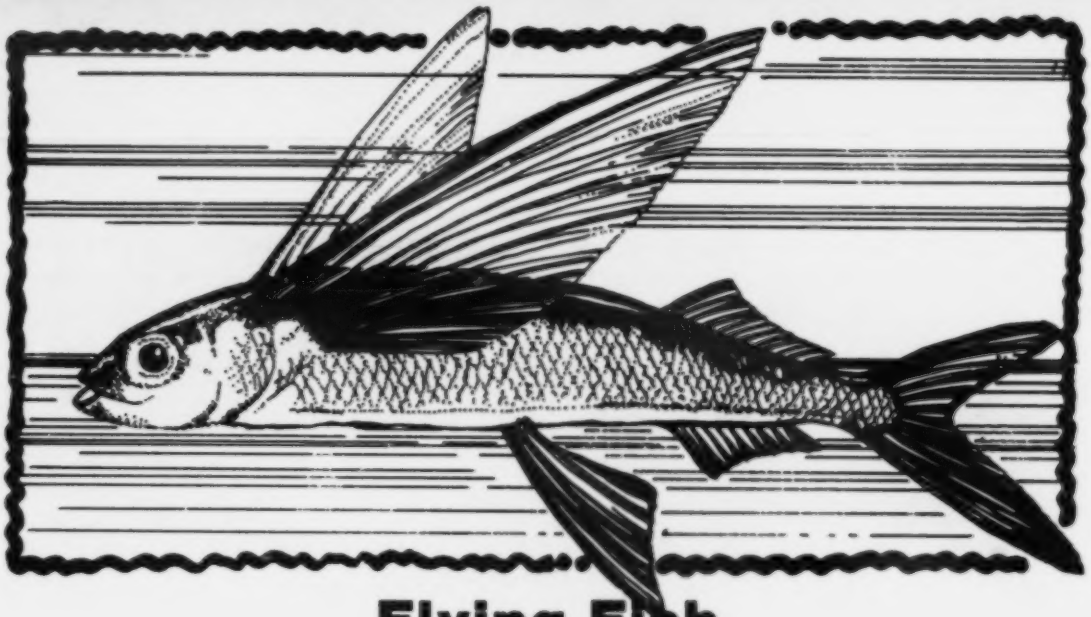
5. Read the phonetic spellings of certain words taken from the selection. Write the correct spelling of each word.
   a. ĭ - lĕk′ - trĭk _____
   b. vōl′ - tĭj _____
   c. pəls′ - ĭz _____
   d. ər′ - lē _____
   e. ə - bĭl′ - ət - ē _____
   f. krē′ - chər _____
   g. yüs′ - fəl _____
   h. kər′ - ənt _____
   i. wē′ - kəns _____
   j. nĕs′ - ə - sĕr - ē _____

Name _____

A Shocking Experience

Directions: Pretend you are an electric ray. Write about one of your most shocking experiences. Where were you? What were you doing? What happened? Use the space below to write about the shocking episode.





Flying Fish

Seamen have related many tales of flying fish soaring above the surface of the ocean. The flying fish appeared to be attracted by lights of the ship. Sometimes the fish entered open portholes and landed on ship decks. Sometimes large schools of flying fish approached with fins outspread as wings.

Do fish really fly? Some fish have the ability to soar through the air, giving the impression of flight. Entire schools of flying fish have been observed leaving the water and gliding through the air at heights of three to fifteen feet. It was first thought that flying fish vibrated their fins, but now it is known that the large pectoral and pelvic fins are held still. Flight is achieved by a rapid beating of the tail beneath the surface of the water. Once the fish achieves enough speed to leave the water, the large fins catch air currents and carry the creature a short distance. The flying fish does not appear to be able to alter its direction after it is in the air. The fish concludes its flight by lowering its tail, dipping into the water, and swimming away.

The flying fish, a social creature, congregates in schools near the surface of the warm ocean waters where it feeds upon small fish and crustaceans. It is a blue fish with silver sides and belly. It has short jaws and large, transparent pectoral fins. It varies in length from four to eighteen inches.

The flying fish lays its eggs on floating seaweed. The newly hatched fish are only about a centimeter long. They do not look much like their parents, and they cannot soar until they reach a length of five to seven centimeters. By then their dorsal fins have developed, and they begin short gliding ventures.

Even though the flying fish is recognized for its gliding expertise, it spends most of its time swimming beneath the surface. When it swims, the long fins fold against its body. When pursued by a dolphin or other predator, it shoots into the air at a speed of thirty-five miles an hour. Once in the air, all is not always safe. There it may find itself chased by frigate birds, albatrosses and gulls.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

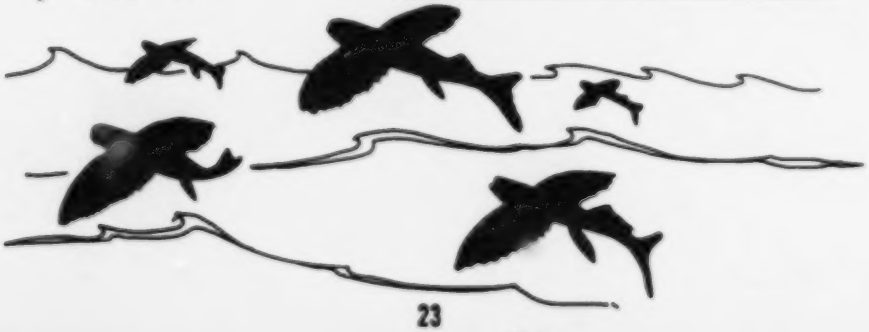
1. The selection is mainly about
   a. a fish that chases gulls
   b. a fish that glides in the air
   c. a fish that has wings

2. The flying fish is
   a. social
   b. a loner
   c. dangerous

3. A word in the selection that means "gathers" is
   a. ventures
   b. achieves
   c. congregates

4. A word that means "to change" is
   a. appear
   b. alter
   c. fold

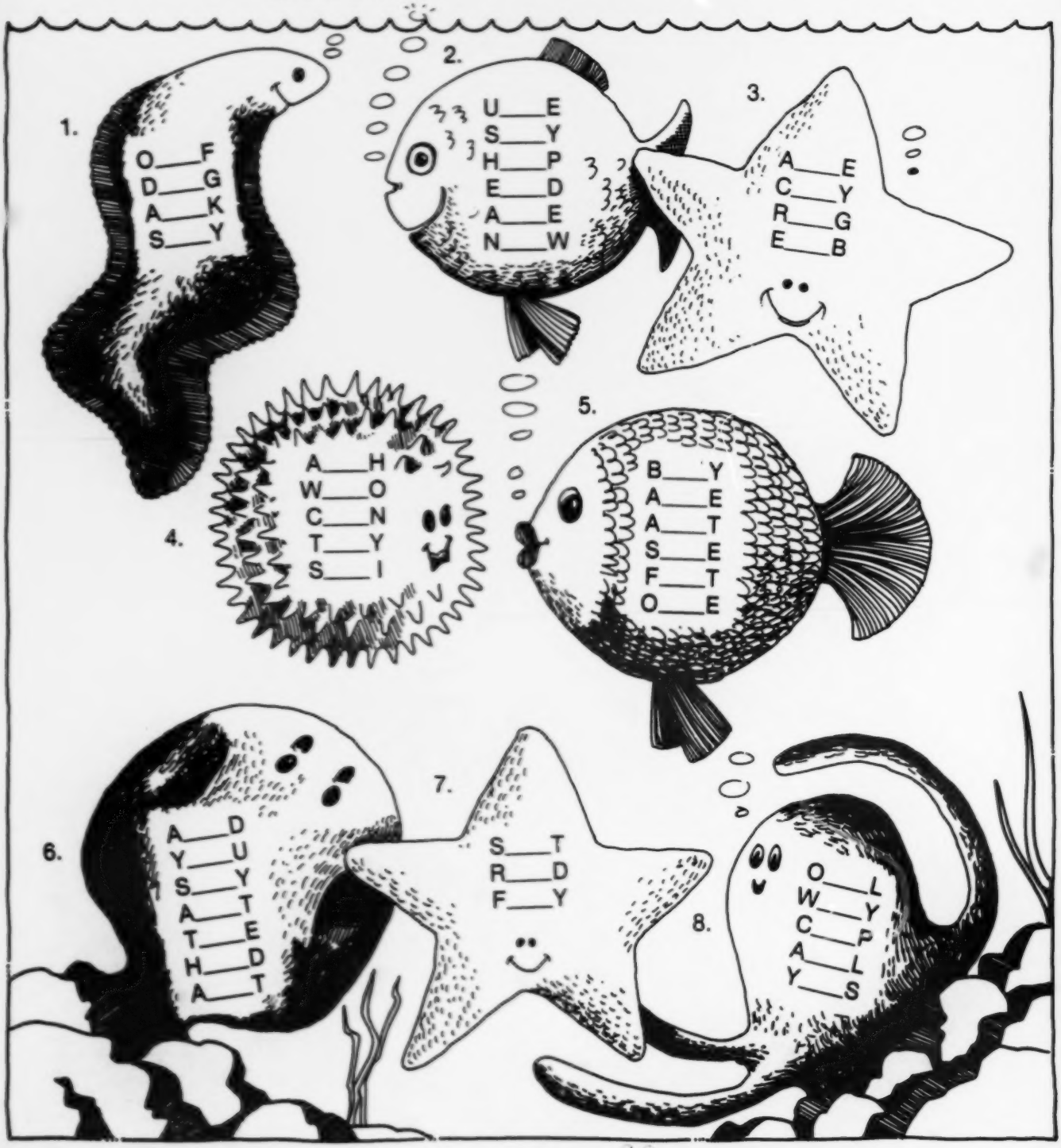
5. Write the correct word for each phonetic spelling.
   a. sō′ - shəl _____
   b. răp′ - əd _____
   c. rĭ - lā′ - tĭd _____
   d. flīt _____
   e. pĕk′ - tə - rəl _____
   f. ĕk - spər - tēz′ _____
   g. flī′ - ĭng _____
   h. ĭm - prĕsh′ - ən _____
   i. lärj′ _____
   j. wät′ - ər _____



Name _____

Ocean Stumpers

Directions: The flying fish shares the ocean with many different kinds of animals. Fill in the blanks with letters to spell three-letter words going across and the names of ocean animals going up and down.



Giganturid

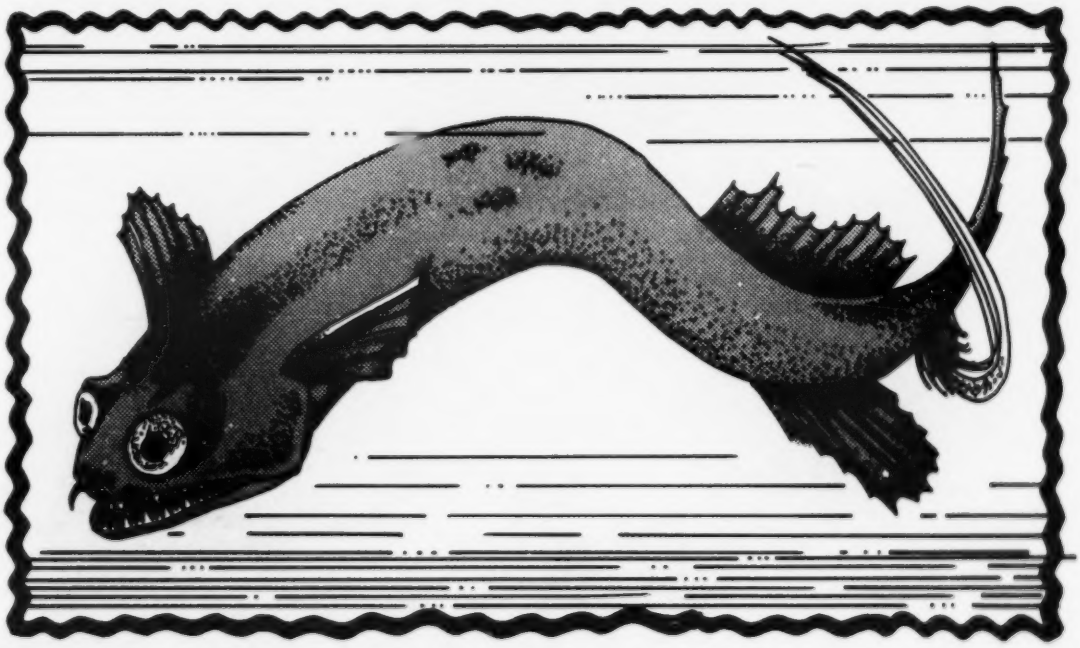
One of the most mysterious deep-sea creatures is the giganturid. Its name is misleading because it is not a gigantic fish. Actually, the fish is only about two to six inches long. Its name refers to the long, lower lobe of its fin tail. The strange fish lives at depths of 1,600 to 6,000 feet in the Atlantic and Indian Oceans.

The giganturid looks like a fish with binoculars. It has a slender, round body and tubular eyes. It lacks pelvic fins and light organs that most fish possess. Its large mouth has sharp teeth that can be raised and lowered. The giganturid is a bright, silver color, but it has no scales. It also lacks many bones that other fish have.

Scientists believe the giganturid is a predatory fish. It is difficult to obtain firsthand information because of the depth at which the creature lives, but its strong jaws and sharp teeth are typical of other predatory fish. The teeth of the giganturid can be lowered to allow more space for swallowing fish. Its stretchy stomach can hold a fish larger than the giganturid itself.

The most striking feature of the giganturid is its eyes. It is not known why the giganturid has tubular eyes, but they may be telescopic, enabling the giganturid to see at distances. It is theorized that the eyes, which have an accessory retina of short rods, may enable fish to distinguish luminescence from the organs of light-producing prey. Whatever the reason, the eyes can only look in a forward direction.

Many questions about the giganturid remain unanswered. Why does it lack light organs like other deep-sea fish? Why does it lack pelvic fins? Why does it have a long, lower tail fin? What is the purpose of the tubular eyes? Do the eyes see at great distances? Perhaps some day we will know more about this bizarre creature. Until then, the giganturid continues to be a mystery of the deep.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a gigantic ocean fish
   b. a familiar ocean fish
   c. a mysterious ocean fish

2. The giganturid has
   a. unusual eyes
   b. light organs
   c. pelvic fins

3. A word in the story that means "thought to be" is
   a. typical
   b. theorized
   c. known

4. A word that means "to recognize as different" is
   a. mysterious
   b. striking
   c. distinguish

5. Divide the following words into syllables. Then underline the syllable that recives the primary stress.
   a. predatory
   b. difficult
   c. telescopic
   d. possess
   e. creatures
   f. tubular
   g. direction
   h. accessory
   i. distance
   j. swallowing

Name _____

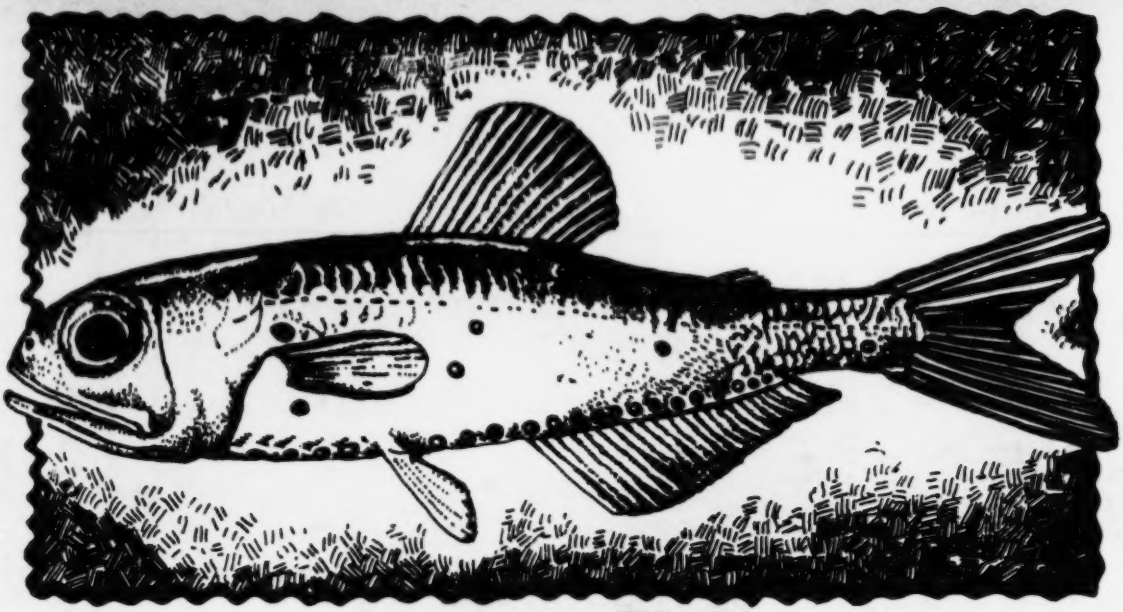
Creatures of the Deep

Directions: Many unusual fish live in the deep ocean. The names of 20 deep-sea fish are hidden horizontally, vertically, and diagonally in the puzzle. Circle as many as you can find.

H A T C H E T F I S H N F T Z U I G H H Y Q A R
L U [illegible] M M J U N M D V L M R A T T A I L W O
D I [illegible] R Z V D U X U H U O T X U F R R A F Y
F L [illegible] X Y H Y F U F Q U O V H L Q V A N
V I P E R F I S H S M Z P L P M N E H I C V S G
W B L J V O O N U K G A P P E A C D R Y K T G Y
D Y P E B C F S Y H Q W I L S O D M E Q F R F N
N Z C X A I V B R E Y C T G U I B D U R I I B X
B R H H T H O M L A E S T T J Y I W L A S P P Z
O G C J F K [illegible] R T I L Q C P R L V U E H O K X
N I J A I X G R R G F D M T X G U S U F D X J
E G Z E S V N C B K D G T G F W U H E P R I Y Z
F A I P H I R I A I E X Z M B I V V A U U O S D
I N T A T C R L L O A R F I S H C A R K U D D H
S T B S U N R U A D E V I L F I S H O G F V B T
H U L V W E T C N U F U R I V I A Q B O T K H F
G R A Y F O V K T T B S U P D F G Z I K H H T A
V I Y M R E Y R E A J O N G L U U I N Q V U Q A
S D Z [illegible] S M [illegible] H R G N A T S S Y K R O N G U H X
F R Z [illegible] H K [illegible] V N P Q G S M A Q T O Y Y P H E V
Y U E V P N [illegible] F X B M L O H T Y E C W Y Y O T
V O K F Y V [illegible] A I J Z Z P E O K G Y F N R K H J
F J A T W G U T S I L Q N R R P D Z X C S O K V
R L G N U A M G H O S Q U I D P R U Z X H D T L

Word Bank

angler	batfish	bonefish	bristlemouth
brotulid	devilfish	flounder	giganturid
hatchetfish	lantern fish	oarfish	paddlefish
rattail	rockfish	sea robin	spiny eel
squid	stingray	tripod	viperfish



Lantern Fish

Life in the deep sea is a world of perpetual darkness filled with strange forms of marine life. Little or no sunlight reaches the depths at which many inhabitants exist. Nature has provided a lighting system for many creatures that live at great depths. Some creatures create cold light as a result of a chemical process called bioluminescence. Others do not possess light organs, but they harbor luminous bacteria that enable them to function in a world of darkness.

One of the most luminous fish in the ocean is the lantern fish. Its lights have been compared to those of an ocean liner. It has rows of lights along its sides, its head, its tail, and underneath. The lights may be white, yellow, green, blue, or red. The lantern fish is the only known fish that is able to turn its lights on and off at will. The fish can decrease the amount of luminescence by pulling a cover over a light organ, or turning the organ inward, depending upon the particular species.

Although there are more than 150 species of the lantern fish, all are small, averaging about ten centimeters in length. All have photophores or light organs. Resembling pearls, the photophores are well-developed. In some species the lights can blink or shine brightly. In others, the lights shine continuously for a half an hour or so before going out. The lights are only used at night. The male and female lantern fish have different patterns of light organs.

At night the lantern fish comes to the surface of the water. A person can attract the lantern fish by shining a light from a ship into the water. If the lantern fish is near, it will approach the light. With the return of dawn, the lantern fish seeks a deeper level of the ocean. The pattern of vertical migration from deeper waters to the surface and back occurs daily.

The lantern fish is found in the waters of the north Atlantic and the Mediterranean Sea at depths of 300 to 1,000 feet or more. It is usually found in the company of other lantern fish. Although it has no commercial value, it is an interesting creature to observe. Scientists hope one day to discover how to produce the chemical light that the lantern fish displays.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

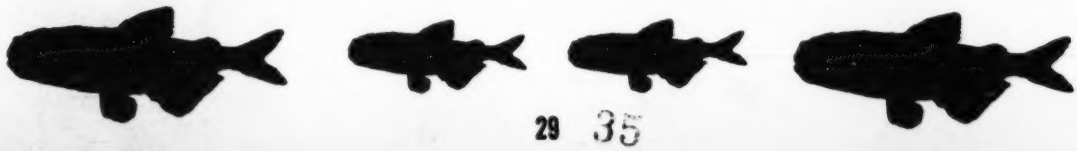
1. The selection is mainly about
   a. a luminous ocean fish
   b. bioluminescent creatures
   c. life in the deep sea

2. The lantern fish
   a. harbors luminous bacteria
   b. creates its own chemical light
   c. reflects light from ships

3. A word in the selection that means "constant" is
   a. daily
   b. pattern
   c. perpetual

4. A synonym for "work" is
   a. create
   b. function
   c. exist

5. Write the root word for each word below.
   a. darkness _____
   b. enable _____
   c. reaches _____
   d. discover _____
   e. brightly _____
   f. usually _____
   g. lighting _____
   h. shining _____
   i. migration _____
   j. interesting _____
   k. deeper _____
   l. compared _____

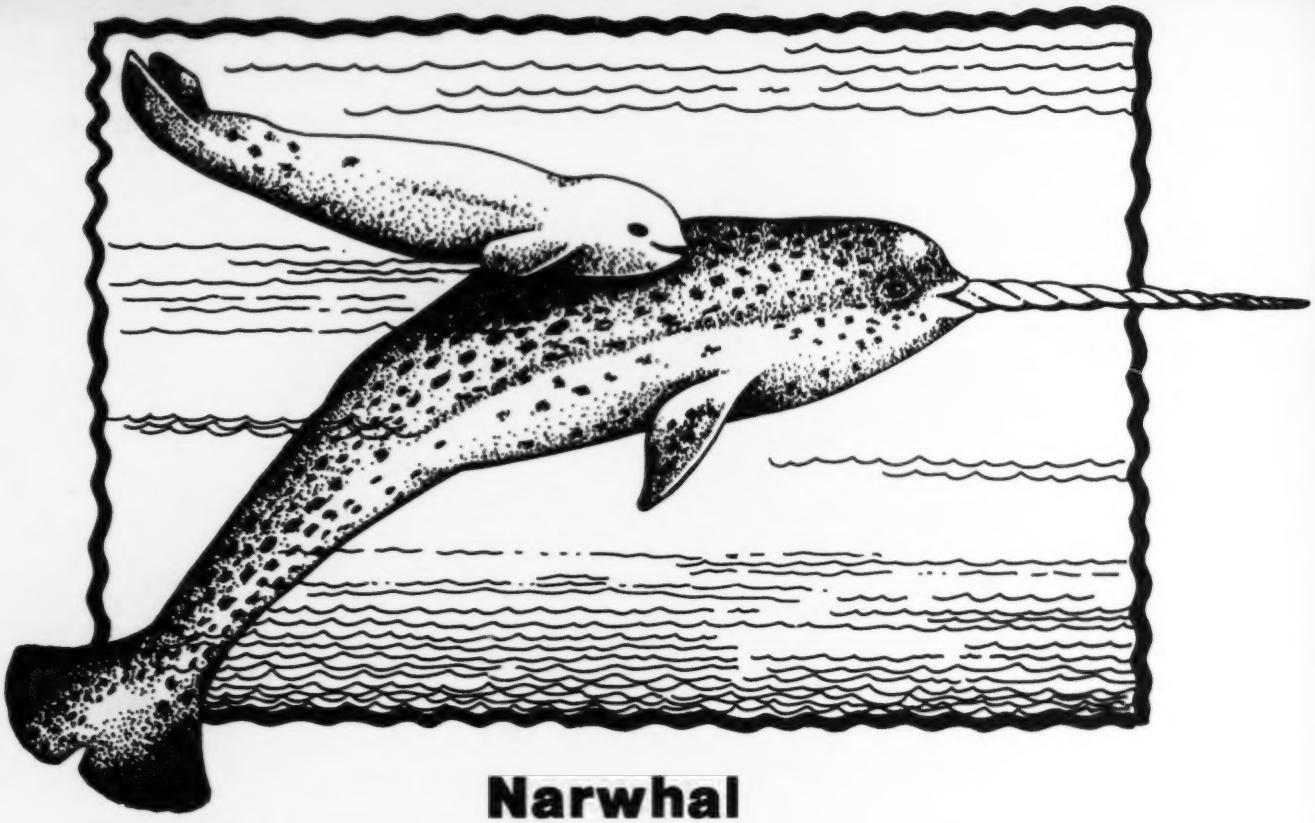


Name _____

A Fish Scrambler

Directions: The names of 20 ocean fish are scrambled below. How many can you unscramble? Write the answers in the blanks.

1. DARABRCUA _____
2. ROLFUDNE _____
3. HAOP _____
4. RPGLEU _____
5. TGNUR _____
6. NGALRE _____
7. SISIFALH _____
8. HWSDSIROF _____
9. KESTA _____
10. YEMLAPR _____
11. MSIRHP _____
12. UINSFSH _____
13. MDUR _____
14. RFPEFU _____
15. SNTSOEFHI _____
16. IHNSBFIORB _____
17. SFPEIVRIH _____
18. SAOFRIH _____
19. RGHEIRN _____
20. PNARSEP _____



Narwhal

If there is a unicorn of the ocean, it is the narwhal. The male narwhal, a member of the whale family, has a conspicuous, twisted horn of ivory on its forehead. The creature was once hunted for its horn. The Vikings brought narwhal horns to Europe where they were valued for their ivory and their supposed ability to neutralize the effects of poisons. About 800 years ago, fishermen in the Arctic collected and sold narwhal horns to merchants who traded them as unicorn horns. The buyers did not know the horn belonged to the narwhal. The horn is not as prized today because it contains a central cavity that makes it useful only for manufacturing small ivory objects.

The narwhal, a fast swimmer, has a bluntly rounded head. Its body is gray with lighter or darker markings. It is about fourteen feet long, excluding its horn. The horn is really the narwhal's only tooth. Several other teeth may be present at birth, but they disappear within a short time. Since the narwhal is not an aggressive mammal, the horn is not used for defense. Some scientists have surmised that the horn may be used to spear fish and to get food from the ocean bottom. Most scientists believe the horn is similar to antlers of a deer.

There are no functional teeth in the narwhal. The creature manages without teeth, even though its diet consists of cuttlefish, crustaceans, and squid. With its mighty jaws it grabs the victim and swallows it whole.

A relative of the beluga whale, the narwhal makes its home in the Arctic. It usually lives in groups of fifty or less. It sometimes is found outside the Arctic Sea, but that is rare. Occasionally it may become trapped by ice, but it tries to keep holes in the ice open so it can surface for air. It probably has survived better than other whales because of its inaccessible surroundings.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The story is mainly about
   a. a long tusk or horn
   b. an ocean unicorn
   c. a horned whale

2. The narwhal lives in
   a. cold waters
   b. warm waters
   c. tropical waters

3. A word in the selection that means "obvious to the eye" is
   a. conspicuous
   b. similar
   c. inaccessible

4. The word "surmised" means
   a. arrived at a conclusion
   b. proven completely
   c. believed

5. Place an X in the blank by each word that is correctly divided into syllables.

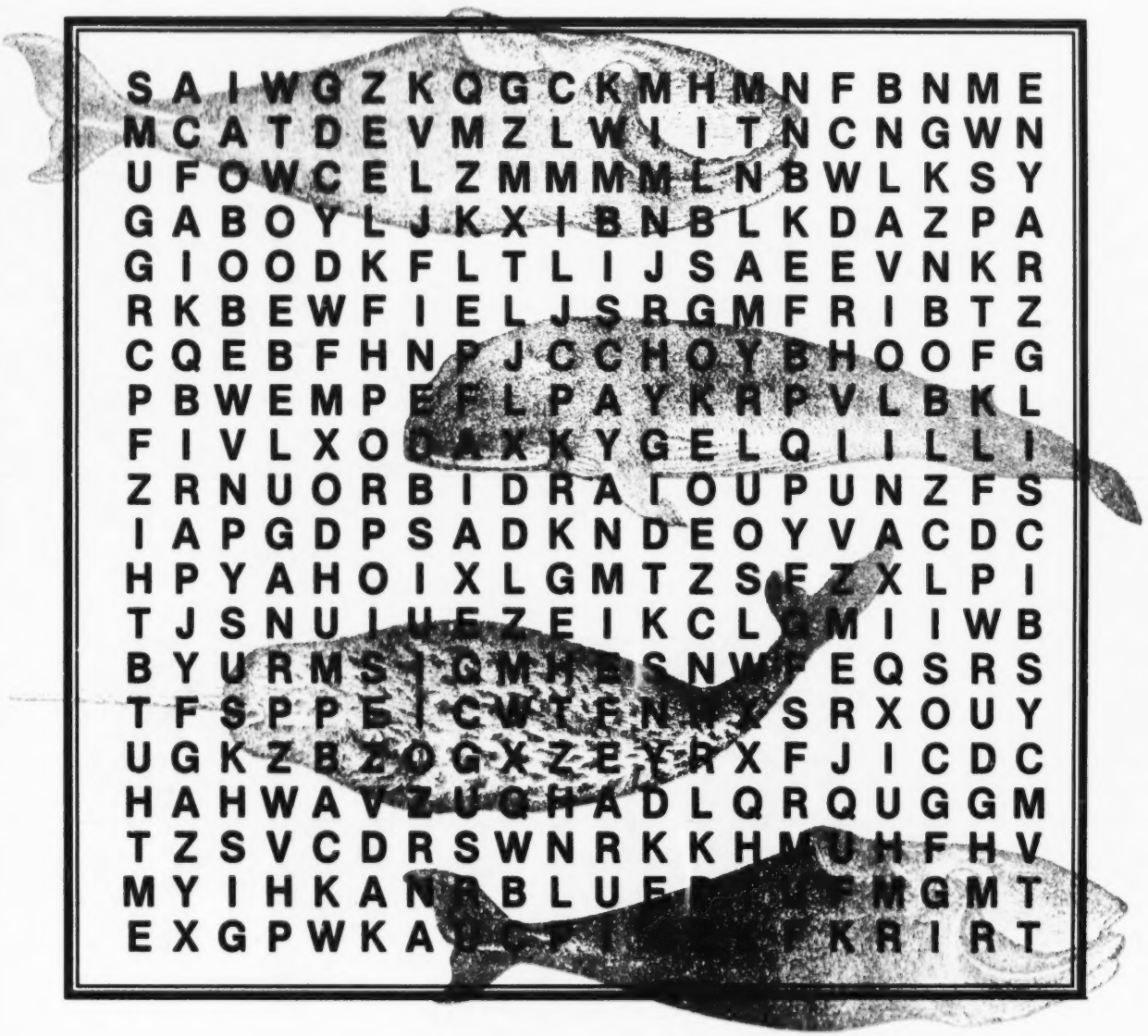
a.	ocean	_____	oc ean	_____	o cean
b.	family	_____	fam i ly	_____	fa mil y
c.	bottom	_____	bot tom	_____	bott om
d.	similar	_____	si mil ar	_____	sim i lar
e.	manages	_____	man ag es	_____	ma na ges
f.	victim	_____	vict im	_____	vic tim
g.	mammal	_____	mamm al	_____	mam mal
h.	aggressive	_____	ag gres sive	_____	agg res sive

38

Name _____

Lookout for Whales

Directions: The puzzle below contains the names of 16 different whales. You may look horizontally, vertically, and diagonally. Circle as many as you can find.



S A I W G Z K Q G C K M H M N F B N M E
M C A T D E V M Z L W I I T N C N G W N
U F O W C E L Z M M M M L N B W L K S Y
G A B O Y L J K X I B N B L K D A Z P A
G I O O D K F L T L I J S A E E V N K R
R K B E W F I E L J S R G M F R I B T Z
C Q E B F H N P J C C H O Y B H O O F G
P B W E M P E F L P A Y K R P V L B K L
F I V L X O O A X K Y G E L Q I I L L I
Z R N U O R B I D R A I O U P U N Z F S
I A P G D P S A D K N D E O Y V A C D C
H P Y A H O I X L G M T Z S E Z X L P I
T J S N U I U E Z E I K C L Q M I I W B
B Y U R M S I Q M H E S N W E E Q S R S
T F S P P E I C W T E N X S R X O U Y
U G K Z B Z O G X Z E Y R X F J I C D C
H A H W A V Z U Q H A D L Q R Q U G G M
T Z S V C D R S W N R K K H M U H F H V
M Y I H K A N B L U E F M G M T
E X G P W K A C K R I R T

Word Bank

baleen	beluga	Biscayan	blue
bowhead	dolphin	fin	humpback
killer	minke	pilot	porpoise
right	rorqual	sei	white

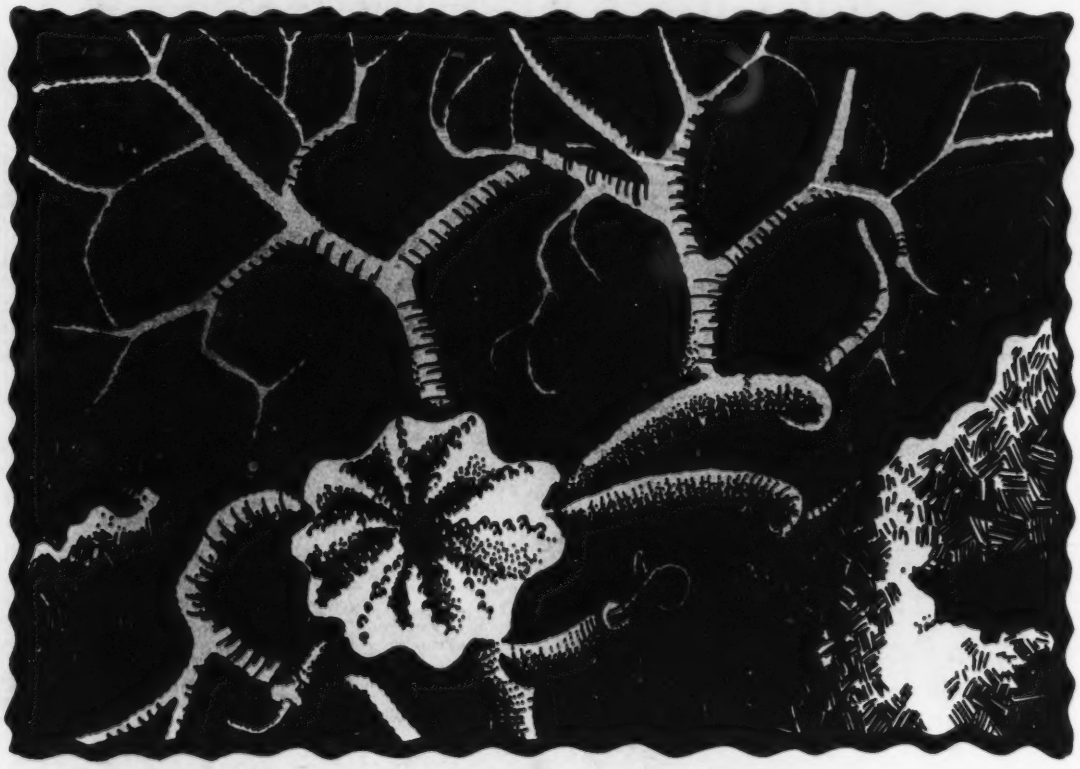
Northern Basket Starfish

The northern basket starfish is an agile creature found moving along the floor of the North Atlantic Ocean. Resembling a cluster of mobile twigs and branches, this unusual starfish elevates its body on tentacles and walks gently along the seabed. Sometimes it moves along at a more hurried pace. It looks like a basket when the branching tentacles are held close to its body. Its five arms branch off from the central body disc in a forked pattern. Each arm has many branches that end in hundreds of tiny tendrils.

The predatory starfish uses its branching arms to capture plankton. When it gets near a source of food, it coils the tendrils around the food. The starfish collects its food and then rolls its entire arm into its mouth to remove the food. When the food is removed, the arm is taken out of the mouth and another arm feeds the creature.

The scientific name of the northern basket starfish is Gorgonocephalus. The name is derived from the word *Gorgon*, a mythological creature whose head was surrounded by snakes. The branches of the northern basket starfish surround the central body disc in a similar way.

Scientists have not yet answered all questions concerning the life cycle of the northern basket starfish. They know that the animal begins life in the larva stage. Tiny larvae are frequently found within the polyps of the coral Gersemia. They do not know why this relationship exists between the larvae and the coral. After leaving the coral, the baby starfish climbs onto the back of the adult starfish. It remains there until it has matured enough to survive on its own. After reaching maturity the northern basket starfish can be expected to live fifteen or more years.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a starfish with tentacles
   b. a basket of starfish
   c. a starfish related to snakes

2. The northern basket starfish is a
   a. predator
   b. parasite
   c. mythological creature

3. The northern basket starfish can
   a. regrow a lost arm
   b. regrow a damaged disc
   c. regrow internal organs

4. A word in the selection that means "able to move quickly and easily" is
   a. branching
   b. agile
   c. hurried

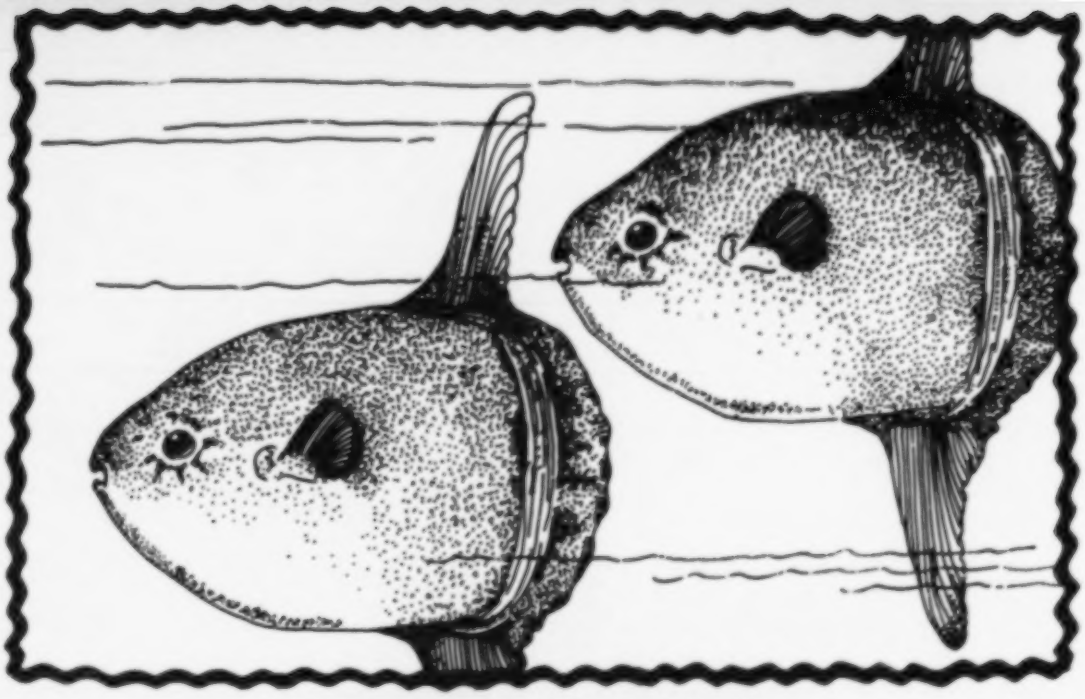
5. A synonym for "bunch" or "group" is
   a. forked
   b. branch
   c. cluster

6. Write the entry word listed in your dictionary that follows each word below.
   a. tentacle _____
   b. scamper _____
   c. plankton _____
   d. derive _____
   e. regenerate _____
   f. maturity _____
   g. predatory _____
   h. coral _____

Name _____

An Adventure to Remember

Directions: Pretend you are a northern basket starfish. Your home is on the rocky bottom of the ocean floor off the coast of Maine. Write about one your most exciting adventures.



Ocean Sunfish

Drifting beneath the surface of the sea is one of the ocean's most fearless predators. Its scientific name is Mola mola, but this enormous, scaleless fish is better known as the ocean sunfish. It is a rather large fish, sometimes reaching lengths of ten or eleven feet and weighing more than 1,000 pounds. Its color varies in shades of gray, brown, and silvery-black. It has a rounded tail and thick, leathery skin. It is often observed resting in the water with its mouth pointing toward the surface and its tail down. It turns a darker color while in the position. When it swims away, the skin coloration becomes lighter again.

Since the ocean sunfish is not eaten, it has few enemies. Its thick skin protects it well. Those who have tried to harpoon an ocean sunfish have found it an almost impossible task. Beneath the tough skin is a two or three-inch layer of gristle. That composition has enabled it to repel rifle bullets. When threatened, the ocean sunfish usually makes no attempt to flee. It responds with a groaning sound, but otherwise ignores the threat.

The diet of the ocean sunfish consists of jellyfish, plankton, fish larvae, and small crustaceans. Because the food is plentiful, the ocean sunfish does not have to swim fast to catch a meal. Its massive dorsal and anal fins slowly propel it through the water. The tail acts as a rudder. It steers with the gills by releasing a stream of water out of a gill or out of the mouth. It siphons in food as it rests in the water.

One problem the ocean sunfish faces is parasites. Sometimes a thick slime accumulates on the fish. Health problems develop when the fish becomes infested with bacteria and parasites. It turns to the wrasse and other cleaner fish to remove the parasites.

The ocean sunfish usually swims alone or in pairs. It is rarely seen in schools of a dozen or more fish. In the spring it migrates north with the Gulf Stream to the waters of the mid-Atlantic coast. It remains there until fall when it journeys southward to warmer waters.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a large fish with few enemies
   b. a dangerous fish with large scales
   c. an enormous, fast-swimming fish

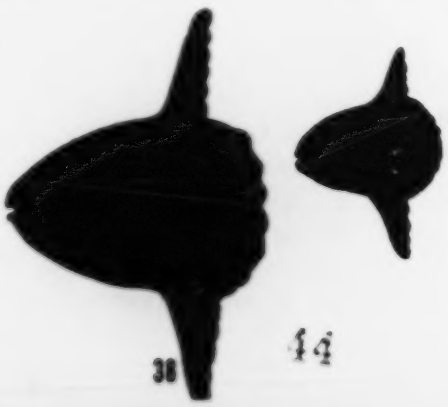
2. The ocean sunfish
   a. has leathery scales
   b. has thin fins
   c. has thick skin

3. A word in the selection that means "push forward" is
   a. repel
   b. flee
   c. propel

4. A synonym for "collects" is
   a. accumulates
   b. siphons
   c. responds

5. Circle the correct phonetic pronunciation of each word.

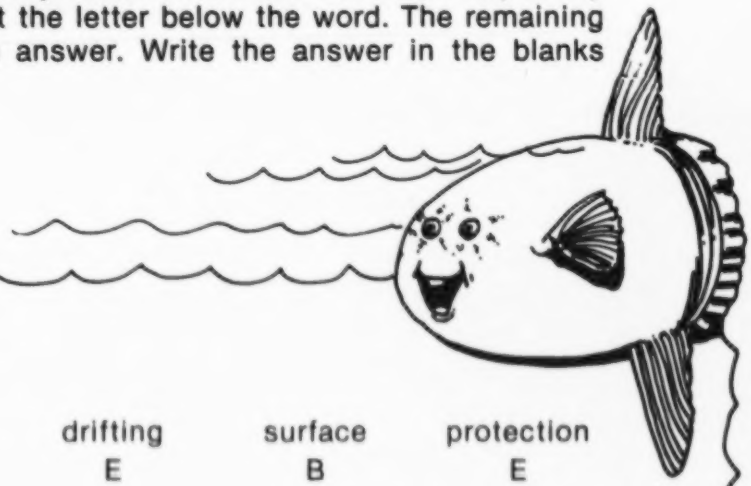
a.	predator	prĕd′ - ət - ər	prĕd - ət - ur′
b.	ocean	ō - shən′	ō′ - shən
c.	composition	käm - pə′ - zĭsh - ăn	käm - pə - zĭsh′ -ən
d.	bacteria	băk - tĭr′ - ē - ə	bāk - tĭr′ - ē - ə
e.	coloration	kŭl - ə - rā - shən′	kəl - ə - rā′ - shən
f.	surface	sər′ - fəs	sər - fĭs′
g.	massive	măs′ - ĭv	măs′ - īv
h.	plentiful	plēn - tĭ′ - fəl	plĕnt′ - ĭ - fəl



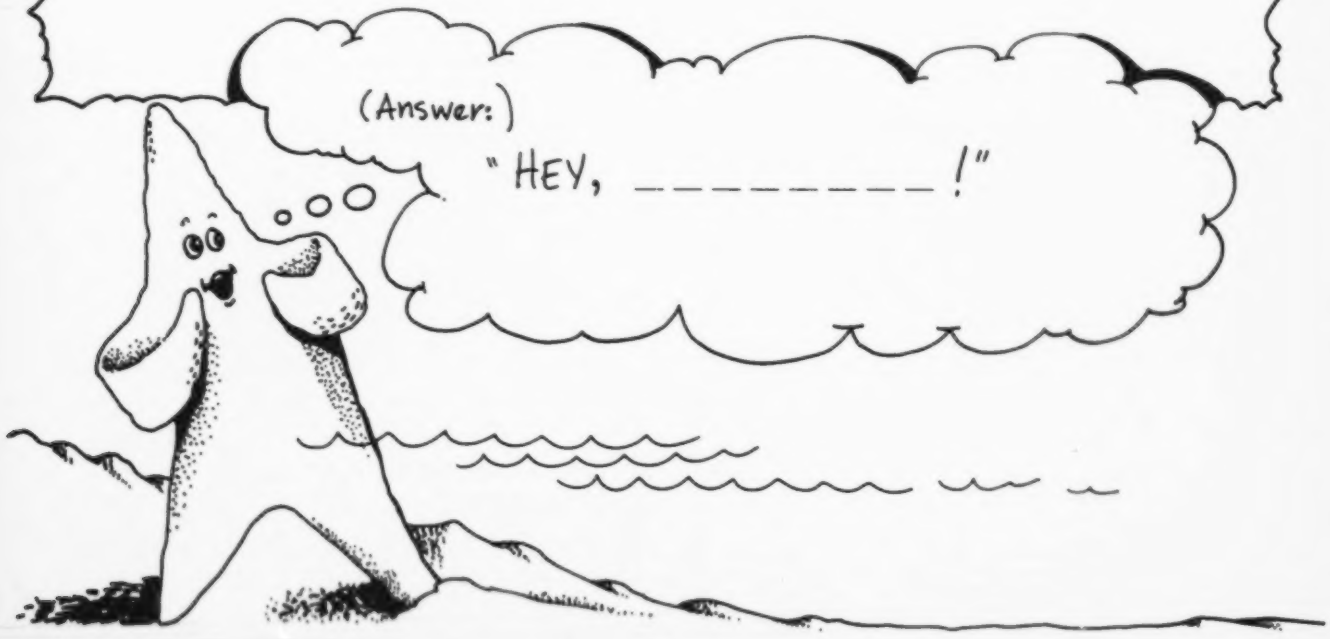
Name _____

A Fishy Name

Directions: What is the sunfish's nickname? Look at each word in the puzzle. If the first syllable of the word contains the primary accent, mark out the letter below the word. The remaining letters spell the answer. Write the answer in the blanks below.



ocean	harpoon	drifting	surface	protection
T	H	E	B	E
develop	rudder	responding	plankton	predator
A	U	D	N	R
floating	aquatic	parasite	expansion	shallow
O	F	A	I	T
inhabit	larvae	siphon	submerge	algae
S	N	Y	H	E



Portuguese Man-of-War

Living at the surface of warm ocean waters throughout the world is a colorful drifter known as the Portuguese man-of-war. The Portuguese man-of-war is actually a group of animals called polyps that are attached to a colorful, hollow float. The float may be red, blue, or purple. Shaped like a sailboat, the float is about eight inches long. It is filled with a gas that enables it to catch the wind and float along the surface of the ocean. When the gas is released, the Portuguese man-of-war sinks below the ocean's surface.

Beneath the balloon-like float are long tentacles used for capturing and holding food. The tentacles may be from thirty to sixty feet long. They contain a poisonous substance that stuns and paralyzes fish. The long tentacles grasp the prey and push it into the digestive cavity.

The tentacles are harmful to man as well as sea creatures. The sting of the poisonous tentacles causes pain and local swelling. If a person is the victim of numerous stings, the result can be fatal.

Hundreds of polyps are found in the Portuguese man-of-war. They are not all alike. Each polyp has a specialized function. One forms an air sac that keeps the colony afloat. Others steer the group. Some are responsible for feeding the colony. Some are concerned with protection. Others are involved in reproducing. The individual polyps cannot exist alone. They must work together in order to survive.

An interesting fact about the Portuguese man-of-war is the presence of a small fish called the Nomeus that lives in and about its tentacles. It has even been observed biting some of the tentacles. Scientists have not determined why the Nomeus does not cause the Portuguese man-of-war to activate its stinging tentacles. If the fish ever becomes wounded, however, it may find itself a victim of the very colony that offers it refuge.

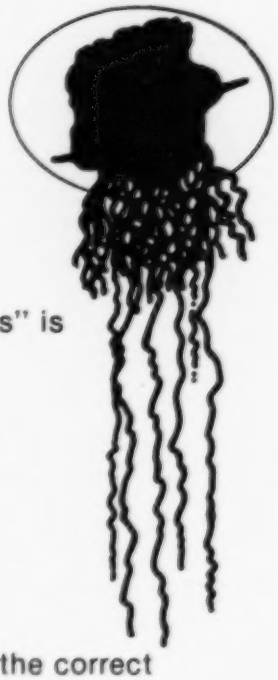
The Portuguese man-of-war, or Physalia, was named by people from Portugal. They chose the name because of its resemblance to their ship, the Portuguese man-of-war.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a fish that lives with the Portuguese man-of-war
   b. a floating colony of polyps
   c. a Portuguese fish



2. The Portuguese man-of-war is
   a. harmless
   b. poisonous
   c. parasitic

3. A word in the selection that means "makes senseless" is
   a. sinks
   b. paralyzes
   c. stuns

4. A synonym for "duty" is
   a. function
   b. resemblance
   c. refuge

5. The sentences below are spelled phonetically. Write the correct spellings of the sentences in the blanks.

   a. Thə´ pōr-chə-gēz´ măn´-əv´-wȯr´ ĭz´ ā´ flōt´-ĭng käl´-ə-nē əv´ sē´ ăn´-ə-məlz.

   _____

   b. Ech´ ăn´-ə-məl sərvz´ ā´ spĕsh´-əl pər´-pəs.

   _____

   c. Thə´ tĕnt´-ĭ-kəlz kən-tān´ stĭng´-ĭng sĕlz´ yüzd´ tü´ stən´ prā´.

   _____

   d. Thə´ stĭng´-ĭng sĕlz´ kȯz´ pān´ ănd´ swĕl´-ĭng ĭn´ hyü´-mənz.

   _____

Name _____

Ocean Anagrams

Directions: The names of 25 things found in the ocean are jumbled in the list below. How many can you unscramble? Write the answers in the blanks.

1. AOCRL _____
2. EWSDEAE _____
3. PEKL _____
4. TSIAFHSR _____
5. RASKH _____
6. QISDU _____
7. HRGIERN _____
8. NLPKATNO _____
9. BLSOETR _____
10. UOOTCPS _____
11. AWLHE _____
12. ORPOSPIE _____
13. MCAL _____
14. HDLPOIN _____
15. OESGPN _____
16. HRIOFAS _____
17. SJLFEYHLI _____
18. IHILAFSS _____
19. YALPERM _____
20. NASMLO _____
21. RSOTYE _____
22. ATNU _____
23. NHUCRI _____
24. RADNISE _____
25. BACR _____

Sea Cucumber

Creeping about sluggishly on the ocean bottoms and hiding in the sand is a marine animal called the sea cucumber. Although there are about 1,000 species of the sea cucumber, most are elongated cylindrical creatures similar in appearance to a garden cucumber. The creature, an echinoderm, is a relative of the starfish. It ranges in length from a few inches to several feet. It is usually a drab shade of brown, gray, black, or violet. The texture of the body surface is leathery, bumpy, and sometimes slimy.

Like the starfish, the body parts of the sea cucumber number in fives or multiples of five. A crown of ten or twenty tentacles surrounds the mouth. The tentacles are used for gathering food. The sea cucumber eats plankton which it sifts through its sticky tentacles. After food is collected on the tentacles, they are bent to the mouth and the food is removed. The sea cucumber also eats mud, extracting organic substances from it. It usually has tube feet which it uses to move about on the ocean floor. The few species without tube feet move about by muscular expansion and contraction.

When the sea cucumber burrows in the sand, it breathes through tubes called respiratory trees. Seawater is carried into the body through respiratory trees where the gaseous exchange occurs. The skin surface and podia are also used in respiration.

Even though the sea cucumber is a relative of the starfish, it is not safe to visit the relative. To do so might cost the sea cucumber its life. The starfish is its main enemy. Other enemies include bottom-feeding fish and small plants.

The sea cucumber has an unusual method of protecting itself. It can escape from a predator by expelling some of its internal organs from the rear part of its body. Later it regrows or regenerates the lost organs.

It has recently been discovered that some species of the sea cucumber have a poisonous substance inside their bodies that is toxic to fish. Other species expel white threads that wrap about small fish.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a marine relative of the starfish
   b. a species of starfish
   c. a type of respiratory tree

2. The sea cucumber is
   a. an ocean plant
   b. an ocean animal
   c. a sea vegetable

3. A word in the selection that means "long" or "lengthy" is
   a. cylindrical
   b. tentacle
   c. elongated

4. The word "sluggishly" means
   a. slowly
   b. freely
   c. softly

5. Write the root word for each of the words below.
   a. leathery _____
   b. contraction _____
   c. carried _____
   d. unusual _____
   e. regrows _____
   f. poisonous _____
   g. removed _____
   h. cylindrical _____
   i. appearance _____
   j. slimy _____

Name _____

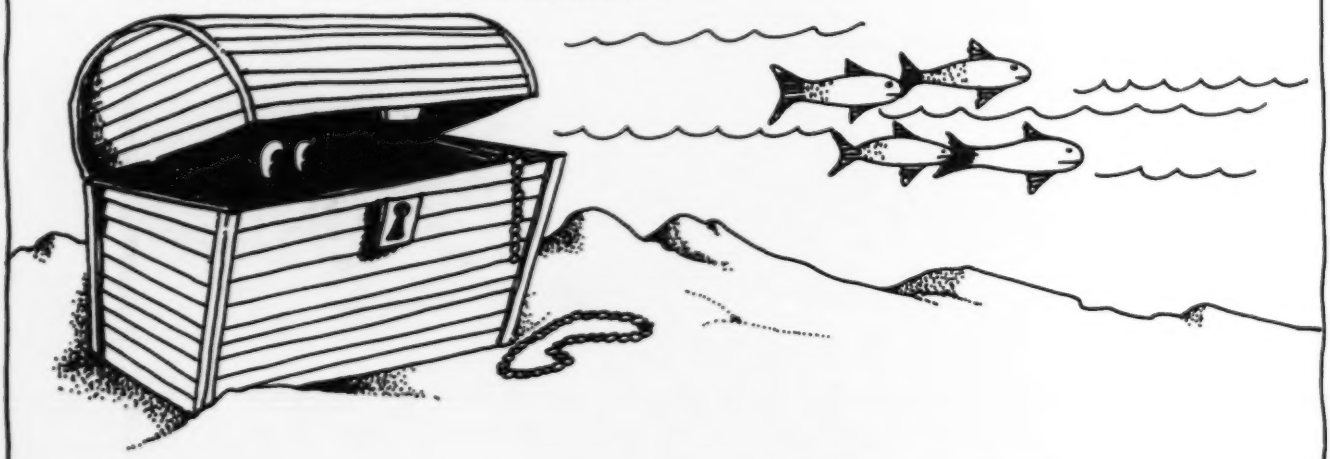
Mystery Creature

I am a creature that prowls about on the ocean floor. I feed on the body fluids of small sea animals. Can you identify me? Follow the directions below to discover my name.

Directions: Look at each word in the puzzle. If the first syllable of the word conains the primary accent, mark out the letter below the word. The remaining letters spell the answer. Write the letters in the blanks below.

creeping	exchange	tentacles	gaseous
M	S	A	N
occurs	enemy	relative	multiple
E	T	B	W
surface	muscular	substances	unusual
R	F	O	A
visit	expel	plankton	appearance
P	S	Y	P
regenerates	recently	leathery	contraction
I	H	S	D
expansion	sluggishly	marine	predator
E	A	R	H

Answer: _ _ _ _ _ _ _ _ _



Sea Snake

Among the most dangerous animals of the ocean is the sea snake. The sea snake is one of fifty species of aquatic snakes. Even though it exists in the water, it must have air to breathe and will drown if submerged too long. It is an excellent swimmer, but most of the time it lies at the surface of the water like a piece of floating debris.

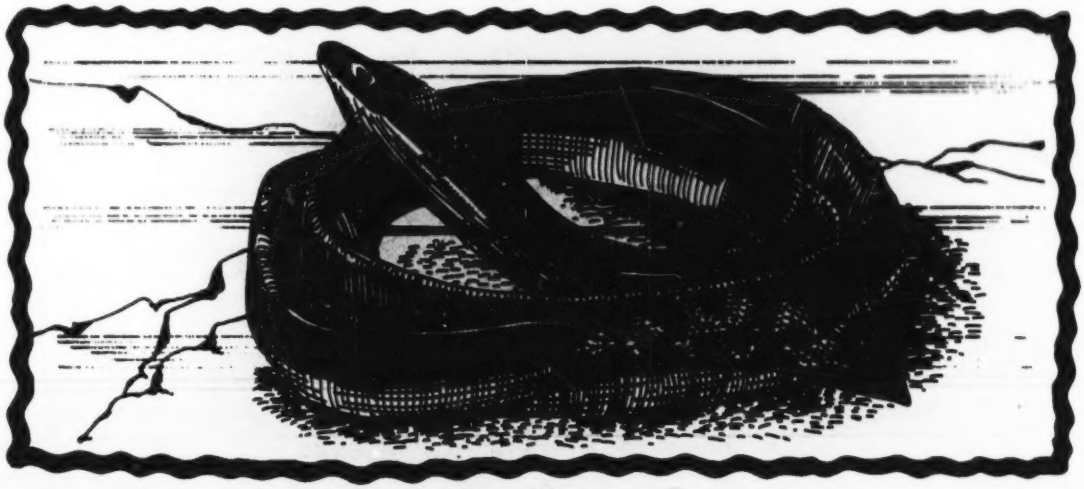
The sea snake is an active marine predator. It varies in length from four to ten feet. Its color also varies. It may be yellow, green, or a light color with a dark banded pattern. Its scales do not overlap as in land snakes. The scales are much smoother, making it more streamlined for mobility in the water. Its body is eel-like, and its tail is rudder-shaped for propelling it through the water. The flattened shape enables it to swim with ease. It pushes its tail from side to side, moving forward or backward as it chooses.

The sea snake must surface for air. Its nostrils are located on top of its snout. It is able to come to surface with only the nostrils exposed above the water. When submerged, valves close off the nostrils. It has a single lung, about three-fourths the length of its body.

The sea snake is a poisonous reptile. It is one of the most feared ocean creatures because of its ability to cause death by a poisonous bite. It usually hunts at night, attacking its victim with venom powerful enough to kill within moments. It often hides among crevices or at the bottom of the ocean floor where it strikes out without warning. It injects its venom with sharp fangs protruding from its upper jaw. The venom causes paralysis, and the victim is then swallowed whole. Even prey larger than the sea snake is swallowed head first.

Sometimes the sea snake is observed congregating in large masses of snakes. The group wriggles and twists near the surface. Hundreds and thousands of snakes may come together from time to time. It is not known why they come together in such large groups, but some scientists believe it is for breeding purposes and migration.

The sea snake has few enemies. No fish are known to approach it. Even sharks seldom attack it. Man and the sea eagle seem to be the only enemies it has. No wonder the sea snake has such a wide ranging territory!



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

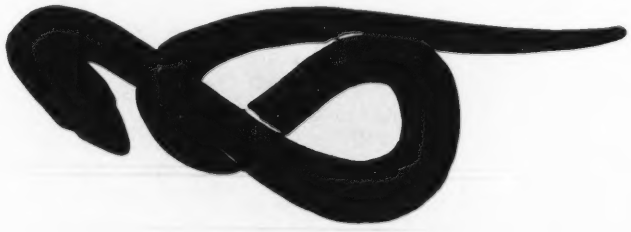
1. The selection is mainly about
   a. the hunting habits of the sea snake
   b. the poisonous sea snake
   c. the enemies of the sea snake

2. The sea snake is
   a. a predatory creature
   b. a harmless sea reptile
   c. a venomous eel

3. A word in the selection that means "jutting out" is
   a. congregating
   b. propelling
   c. protruding

4. A word that means "living in water" is
   a. aquatic
   b. submerged
   c. swimmer

5. Write the root word for each of the words below. Circle the suffix or prefix in each word.
   a. dangerous _____
   b. enables _____
   c. banded _____
   d. submerged _____
   e. poisonous _____
   f. powerful _____
   g. smoother _____
   h. floating _____

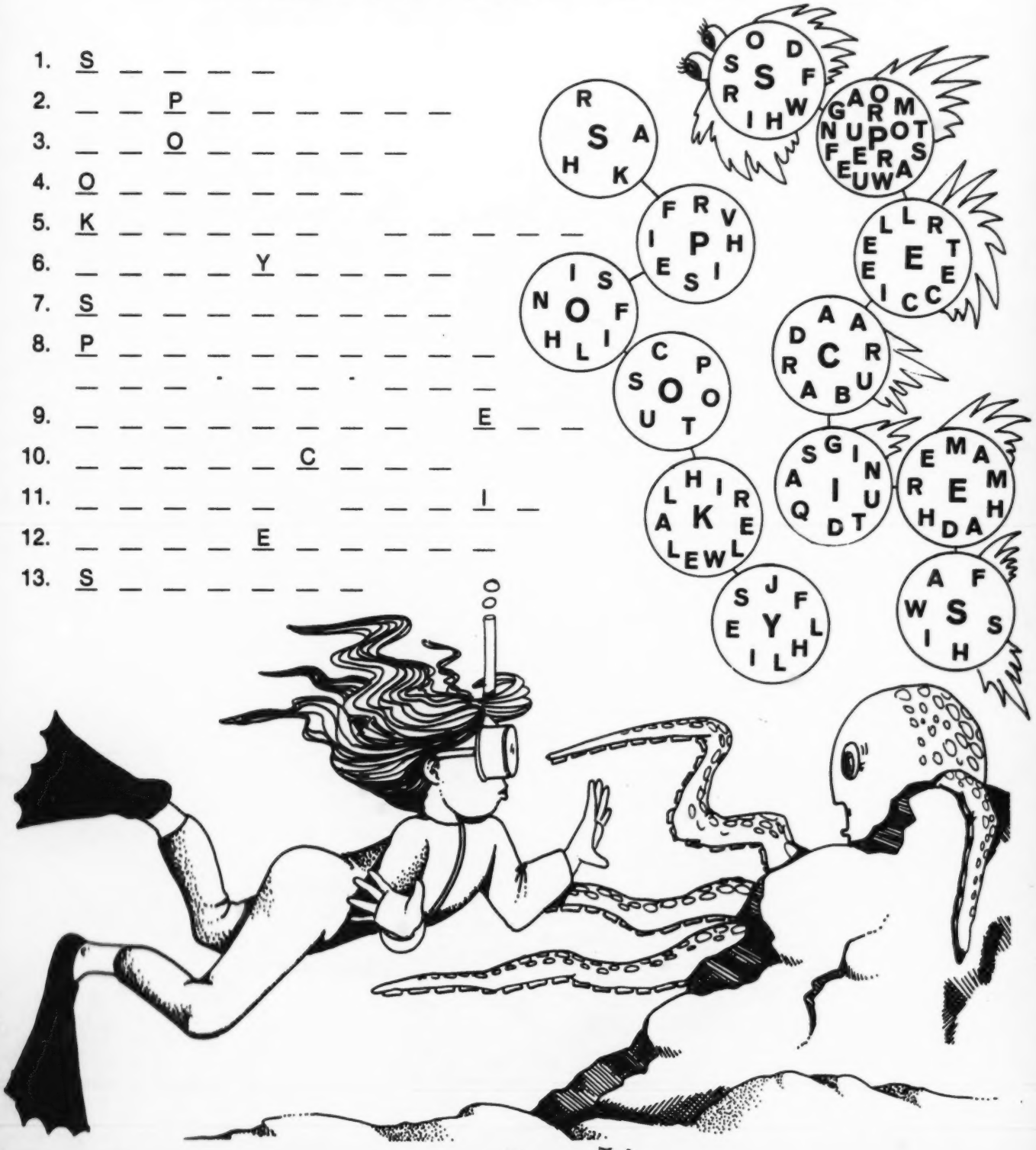


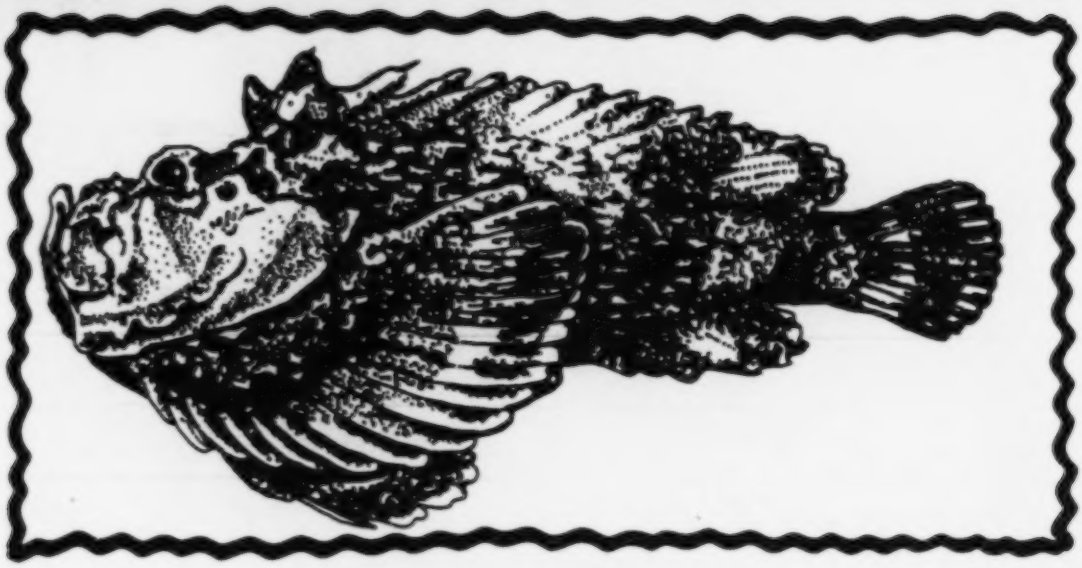
Name _____

Spooky Species

Directions: The sea snake is only one of the dangers of the ocean. Many other creatures have given man a scary feeling. How many of the frightening creatures below do you recognize? Unscramble the letters and write the names of the spooky ocean creatures in the blanks below.

1. S _ _ _ _
2. _ _ P _ _ _ _ _ _
3. _ _ O _ _ _ _ _
4. O _ _ _ _ _ _
5. K _ _ _ _ _ _ _ _ _ _
6. _ _ _ _ Y _ _ _ _
7. S _ _ _ _ _ _ _ _
8. P _ _ _ _ _ _ _ _ _
   _ _ _ _ _ _ _ _
9. _ _ _ _ _ _ _ _ E _ _
10. _ _ _ _ _ C _ _ _
11. _ _ _ _ _ _ _ _ I _
12. _ _ _ _ E _ _ _ _ _
13. S _ _ _ _ _ _





Stonefish

Living in muddy seabeds and coral rocks of the Indian Ocean, the Red Sea, and the waters near Australia is the stonefish, one of the ugliest of all fish. It resembles a piece of rock covered with a growth of algae and slime. Less than twelve inches long, the stonefish has a broad, flat head. Its body narrows from the head to a small rear fin. Its pectoral fins are large, and the dorsal fin has thirteen spines. The muddy colored fish does not have scales.

Besides being an unattractive fish, the stonefish is an extremely dangerous creature. The deadliest of all fish, its poison can kill a human in just minutes. It is a dangerous threat because it is so difficult to spot. The stonefish lies still until threatened. Then it erects its dorsal spines containing sacs of poison. Pressure on the tips of the spines causes the poison to be released. A person who accidentally steps on a stonefish can be seriously harmed. Even dead stonefish are capable of injuring a person with the deadly venom.

Its ability to camouflage itself enables the stonefish to find food easily. It usually rests half-buried beneath ocean sediment. Lying motionless on the seabed, the stonefish waits for a tasty meal to come its way. It quickly devours unsuspecting prey, swallowing the victims whole. The poisonous spines are not used in getting food.

Although the stonefish is a dangerous fish, it does have several enemies. Among those are sharks and rays. It is particularly vulnerable to its enemies during early life. During this time it may fall victim to the conch, a large ocean snail.

The aborigines of Australia are quite familiar with the dangerous stonefish. They perform a dance to imitate a fisherman stepping on a stonefish. The dancer grabs the wounded foot, screams, and suffers in agony as a witch doctor attempts to save his life. After the witch doctor's chants fail, the victim sings a death song. A clay model of the stonefish with thirteen wooden spikes is used to help demonstrate the significance of the venomous stonefish.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. an unattractive poisonous fish
   b. a poisonous ocean fish
   c. a harmless fish resembling a stone

2. The stonefish is
   a. dangerous
   b. harmless
   c. defenseless

3. A word in the selection that means "open to danger" is
   a. capable
   b. vulnerable
   c. dangerous

4. A word that means "intense pain" is
   a. agony
   b. wounded
   c. deadliest

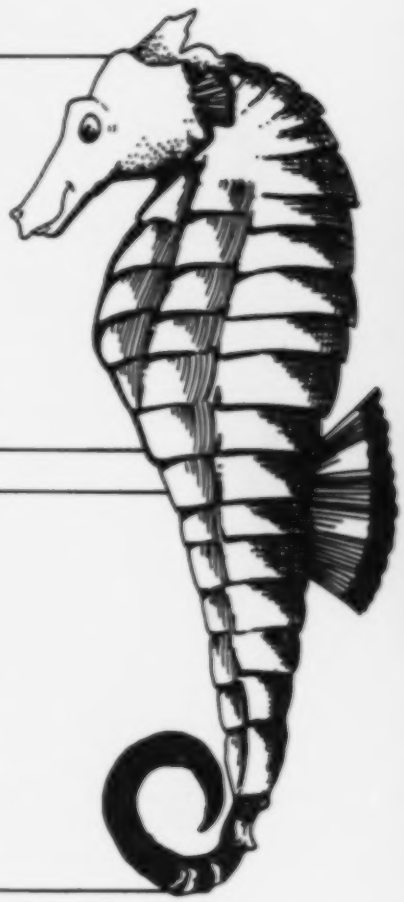
5. If the guide words on a dictionary page are "cone" and "deal," place an X in the blank by each word that should appear on the same page.

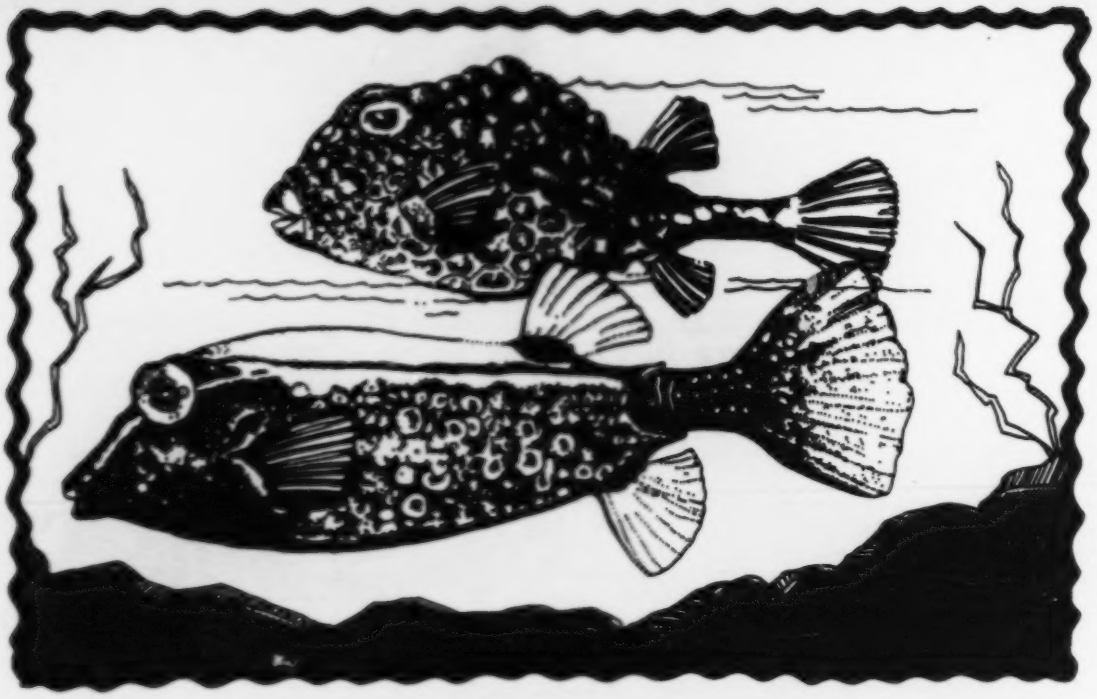
   _____ a. dangerous
   _____ b. deadly
   _____ c. conch
   _____ d. difficult
   _____ e. dorsal
   _____ f. contain
   _____ g. devour
   _____ h. dance
   _____ i. demonstrate
   _____ j. dancer
   _____ k. doctor

Name _____

Sea Horse Cinema

Directions: While studying the stonefish and other creatures of the coral reef, you become acquainted with the sea horse. A famous movie director asks you to create a cartoon depicting the life of the sea horse. He insists that the script be factual. Use an encyclopedia or reference book to verify your facts. Create your cartoon cinema in the spaces below.





Trunkfish

The trunkfish, resembling a colorful polka-dotted box, is quite a marine oddity. This strange ocean fish has been described as a bony box with openings for eyes, mouth, and fins. The body scales are fused into six-sided plates, creating a solid shell through which fins and tail protrude. Its nickname, boxfish, was derived from its angular box-like shape. Seldom more than eighteen to twenty inches long, the trunkfish is an inflexible creature.

Because of its unusual shape, the movements of the trunkfish are more restricted than those of other fish. It is a slow swimmer. It can turn about in circles with ease, but it is rather limited in other movements. It manages to get around by a rapid beating of its fins.

Since it maneuvers slowly, many prey can outswim the trunkfish. That limits its diet primarily to crustaceans, worms, and polyps. Although many sea creatures swallow their food whole, the trunkfish does not gulp its food. It chews its meals. Its strong teeth crush small prey into tinier pieces before swallowing.

The male and female trunkfish have different color patterns. They do not look like the same species. The female is polka-dotted, but the male is not. It is a brightly colored fish found in a variety of patterns and colors.

The eyes of the trunkfish are interesting. They are large eyes, and they can move independently of each other. However, when the trunkfish glimpses a prospective meal, both eyes focus intently on it.

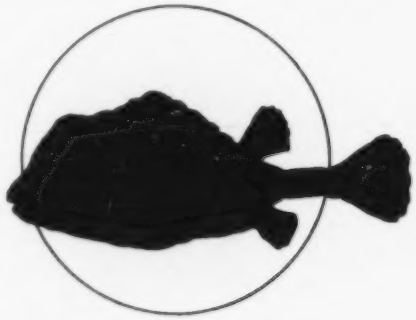
The trunkfish is able to release a toxic substance when disturbed. The substance kills other fish nearby. The trunkfish is not selective in harming just one fish with the poison, but it may kill many creatures in its vicinity. In fact, the toxic substance has even been known to kill the trunkfish itself!

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a slow swimming polyp
   b. a fish with a box-shaped shell
   c. a polka-dotted box



2. The trunkfish is
   a. a flexible creature
   b. an inflexible creature
   c. a camouflaged creature

3. The coloring of the male and female trunkfish
   a. is similar
   b. is identical
   c. is different

4. In the selection a word that means "joined together" is
   a. inflexible
   b. restricted
   c. fused

5. A synonym for "expected" is
   a. prospective
   b. resembling
   c. limited

6. The words below have been divided into syllables. Circle the syllable in each word that receives the primary accent.

a.	resembling	re sem bling
b.	limited	lim it ed
c.	different	dif fer ent
d.	marine	ma rine
e.	focuses	fo cus es
f.	swimmer	swim mer
g.	prospective	pro spec tive
h.	substance	sub stance
i.	crustaceans	crus ta ceans
j.	oddity	odd i ty

Name _____

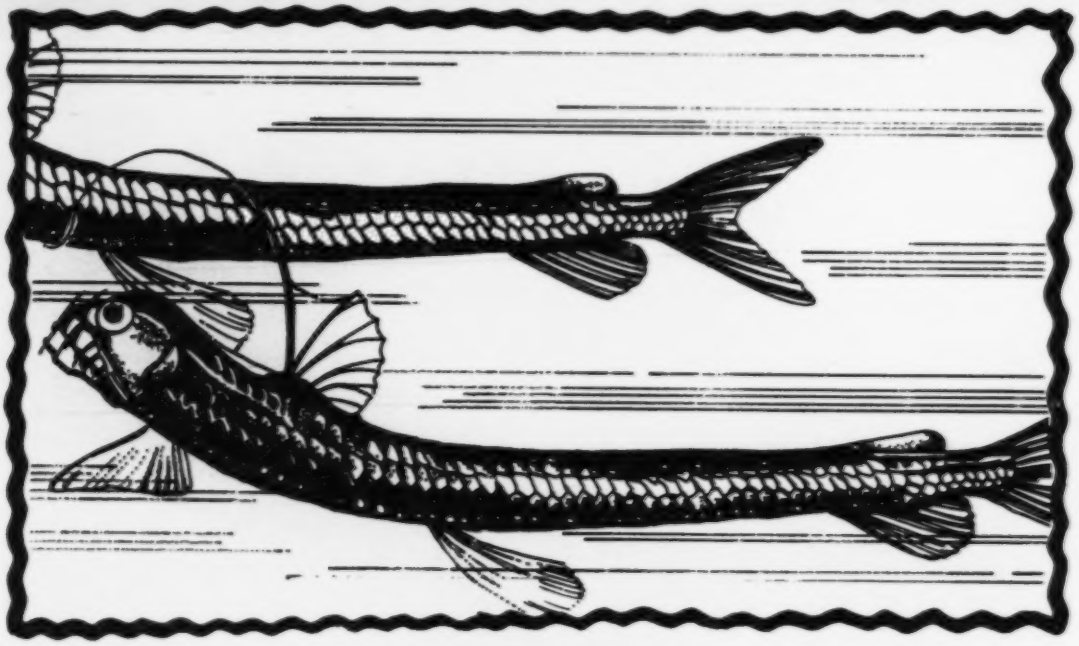
Trunkfish Treat

Directions: Even though the trunkfish is poisonous, some inhabitants of the Pacific islands have been known to prepare the trunkfish in a special way and eat it. To find out how it is prepared, cross out the letter below each word that contains a prefix. The remaining letters spell the answer.

encircle B	disappear G	joyous R	abnormal S	unhappy E
improper A	honestly O	inactive I	misfortune K	dislocate R
rewrite E	unlimited C	distance A	unnecessary V	pretest Y
preview W	carefully S	misty T	inability O	unfair N
rearrange L	pleasing E	notable D	unwind M	impossible H

Answer: _ _ _ _ _ _ _ _

60



Viperfish

What has needle-sharp fangs, a small head, and a chemically produced lighting system? If you have ever seen a viperfish, you will remember these features of the fearsome fish. The viperfish, an inhabitant of the deep sea, is an unusual creature. Subsisting at depths of 1,500 to 8,000 feet, the viperfish is found in all oceans. It is a small fish seldom exceeding nine or ten inches in length. The viperfish resembles an eel with a small, heavy head. Its long, fang-like teeth give it a ferocious appearance.

Like other fish of the deep, nature has equipped the viperfish with photophores, or light organs, to enable it to see at dark depths of the ocean. A double row of photophores extends along both lower sides of the body. The chemically produced light enables the viperfish to see its prey and to avoid enemies. Its mouth and eye sockets contain hundreds of photophores that are used to attract shrimp and other small fish. Many tiny sea creatures are lured by the photophores and fall victim to the viperfish as they investigate the light.

Named for its long, snake-like fangs that curve into its mouth, the viperfish is a fierce predator. It can even swallow prey larger than itself. When the viperfish swallows large prey, it lifts its upper jaw and lowers its bottom jaw. It moves its heart forward and its gills outward to make more room for the large meal. The stomach of the viperfish is made of a stretchy fiber that enables it to hold large prey. After the prey has been devoured, the jaws, heart, and gills of the viperfish return to the usual position.

Little else is known about the viperfish. Scientists hope one day to gain a better understanding of how it is able to produce its light. If that secret can be unlocked, perhaps the knowledge can be used to produce light without heat. Until then, it is an intriguing feature of the viperfish and other bioluminescent creatures.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a predatory deep-sea fish
   b. a sea viper
   c. a luminous sea eel

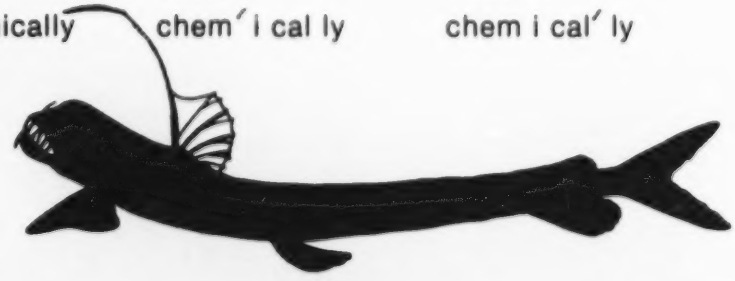
2. The viperfish
   a. lacks light organs
   b. attracts light
   c. produces light chemically

3. A word in the selection that means "living" is
   a. subsisting
   b. inhabitant
   c. appearance

4. A synonym for "provided" is
   a. produced
   b. equipped
   c. devoured

5. Each word below has been divided into syllables and accented two different ways. Circle the correct one.

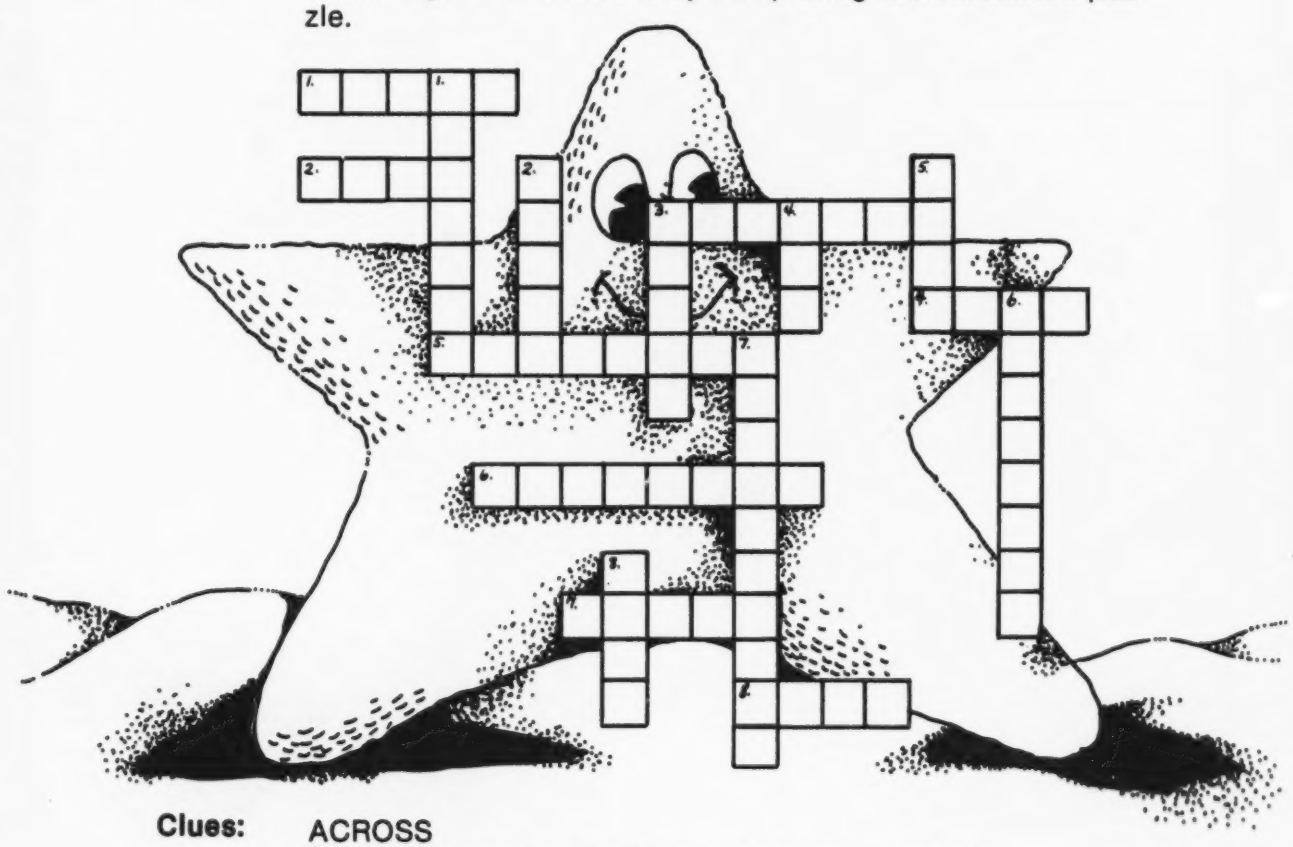
a.	creature	crea´ ture	crea ture´
b.	swallow	swal´ low	swal low´
c.	upper	up´ per	up per´
d.	appearance	ap´ pear ance	ap pear´ ance
e.	attract	at´ tract	at tract´
f.	ferocious	fe ro´ cious	fe´ ro cious
g.	position	po´ si tion	po si´ tion
h.	fiber	fi´ ber	fi ber´
i.	avoid	a´ void	a void´
j.	chemically	chem´ i cal ly	chem i cal´ ly



Name _____

Ocean Wonders

Directions: The oceans are full of fascinating discoveries. Show your knowledge of the oceans by completing the crossword puzzle.



Clues:

ACROSS

1. A limestone formation made by tiny animals
2. The largest whale
3. The top of the ocean
4. A cold-blooded aquatic creature
5. A shocking eel
6. Tiny floating plants and animals
7. An oyster's treasure
8. A sea bird

DOWN

1. A bright polyp resembling a flower
2. Sea plants
3. A dangerous ocean predator
4. A movable structure enabling a fish to swim
5. A chain of rocks or coral
6. An echinoderm
7. Concealment by disguise
8. Seaweed

Answer Key

Page 2: 1. c 2. c 3. a 4. a 5. b 6. b, unusual; a, clever; c, resisting; b, proceeds despite danger

Page 5: 1. b 2. c 3. a 4. b 5. c, ready to attack; a, noticeable; b, watched 6. 1st column: 8, 3, 6, 7, 10; 2nd column: 9, 1, 4, 2, 5

Page 6: 1. A 2. L 3. A 4. [illegible] 10. A 11. R 12. K
Answer: A [illegible]

Page 8: [illegible]s b. mol|lusk c. fea|ture d. mus|cles
[illegible] g. sub|stance h. con|tract i. se|cre|tions j. sur|vive

Page 9: [illegible], seal, shark, snail, whale, coral, moray, salmon, [illegible] oarfish, hake, sole, mola, monkfish cowfish

[illegible] a. shallow b. groom c. couple d. special e. behavior [illegible] h. structure

Page [illegible]: 1. T 2. H 3. E 4. P 5. E 6. A 7. R 8. L 9. F 10. I 11. S 12. H
Answer: THE PEARLFISH

Page 14: 1. a 2. b 3. c 4. a 5. a. inside; b. dramatic; b. fragile; c. e. in the; b. flashes c. jelly d. digested e. natural f. [illegible] g. refusing h. ashore

Page 15: FLUORESCENT CORAL

Page 17: 1. b 2. a 3. c 4. a 5. b 6. Place an X in the blanks for [illegible]

Page 18:

K	W	U	S	V	X	D	P	T	S	C	I	U	F	M	D	S	R	B	M
W	H	O	Z	D	L	G	X	W	O	X	H	E	R	K	O	X	A	R	T
X	S	V	G	V	Q	C	H	H	H	S	B	B	F	O	L	H	I	I	B
Q	D	O	A	C	S	S	Y	V	F	A	F	F	C	B	P	F	U	G	A
F	I	L	E	F	I	S	H	F	C	K	R	A	Z	N	H	R	C	E	D
I	K	R	U	Z	W	L	D	H	V	R	O	E	B	K	I	U	U	R	J
S	U	N	F	I	S	H	Q	C	I	A	P	A	K	D	N	S	H	F	A
F	P	O	R	P	O	I	S	E	V	D	Q	L	S	R	B	M	S	I	N
H	P	R	A	W	N	K	O	L	A	O	K	S	Z	I	F	F	B	S	H
N	V	Y	B	E	Z	X	B	V	P	P	X	Z	Y	N	Y	R	C	H	V
Z	B	J	Q	M	E	G	W	S	W	Z	Y	D	L	Y	D	U	B	P	J
B	E	P	I	K	I	P	S	T	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

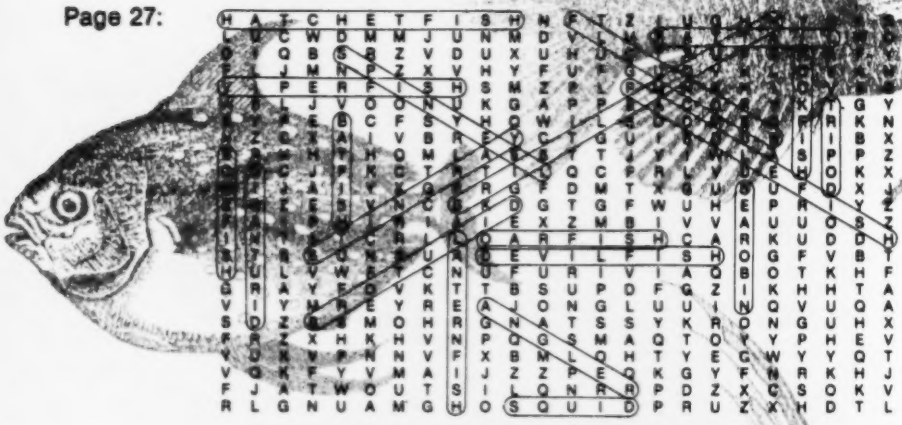
Page 20: [illegible] a. electric b. voltage c. pulses d. early e. ability [illegible] h. current i. vibrations j. necessary

Page 23: 1. b 2. a 3. c 4. b 5. a. social b. rapid c. related d. flight e. pectoral f. expertise g. flying h. impression i. large j. water

Page 24: 1. fish 2. sponge 3. crab 4. shark 5. urchin 6. dolphin 7. eel 8. whale

Page 26: 1. c 2. a 3. b 4. c 5. a. pred a to ry b. dif fi cult c. tel e scop ic d. pos sess e. crea tures f. tu bu lar g. di rec tion h. ac cas e o r y i. dis tance j. swal low ing

Page 27:

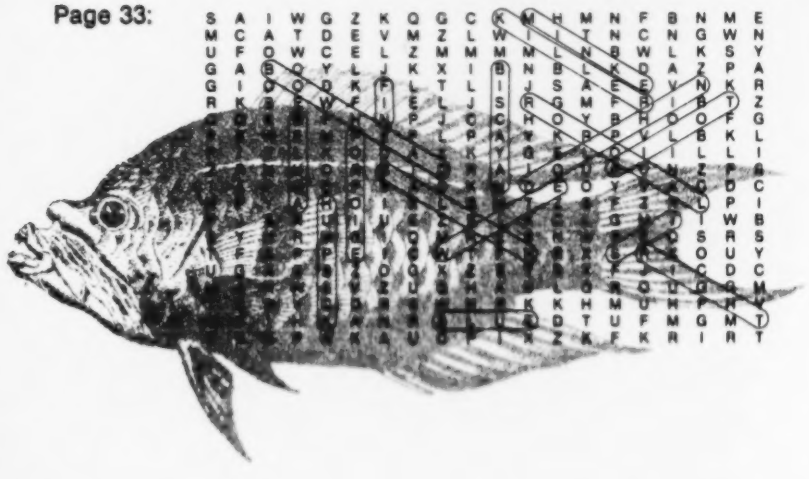


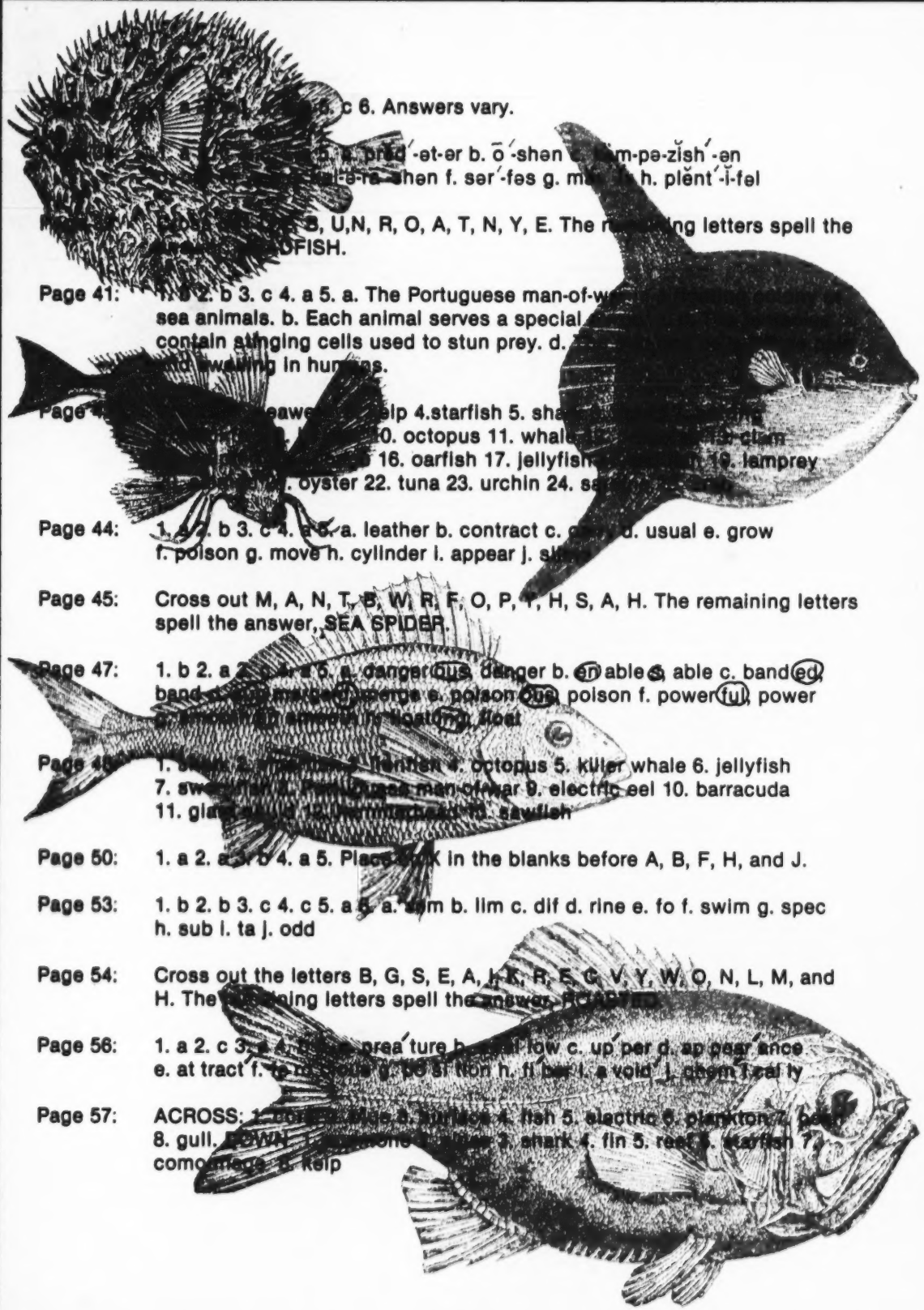
Page 29: 1. a 2. b 3. c 4. b 5. a. dark b. able c. reach d. cover e. bright f. usual g. light h. shine i. migrate j. interest k. deep l. compare

Page 30: 1. barracuda 2. flounder 3. opah 4. gulper 5. grunt 6. angler 7. sailfish 8. swordfish 9. skate 10. lamprey 11. shrimp 12. sunfish 13. drum 14. puffer 15. stonefish 16. ribbonfish 17. viperfish 18. catfish 19. herring 20. snapper

Page 32: 1. c 2. a 3. a 4. a 5. a. o cean b. fam i ly c. bot tom d. sim i lar e. man ag es f. vic tim g. mam mal h. ag gres sive

Page 33:





c 6. Answers vary.

a. prěd´-ət-ər b. ō´-shən m-pə-zĭsh´-ən
-ə-rə-shən f. sər´-fəs g. m h. plĕnt´-ĭ-fəl

B, U,N, R, O, A, T, N, Y, E. The r ng letters spell the
OFISH.

Page 41: 1. b 2. b 3. c 4. a 5. a. The Portuguese man-of-w
sea animals. b. Each animal serves a special
contain stinging cells used to stun prey. d.
wearing in hum s.

Page 4 eawe elp 4.starfish 5. sha
0. octopus 11. whale
16. oarfish 17. jellyfish 19. lamprey
. oyster 22. tuna 23. urchin 24. sa

Page 44: 1. a 2. b 3. c 4. a 5. a. leather b. contract c. d. usual e. grow
f. poison g. move h. cylinder i. appear j. sl

Page 45: Cross out M, A, N, T, S, W, R, F, O, P, T, H, S, A, H. The remaining letters spell the answer, SEA SPIDER.

Page 47: 1. b 2. a 3. a 4. a 5. a. danger(ous), danger b. (er) able(s), able c. band(ed), band e. poison(ous), poison f. power(ful), power
. (s) e. float

Page 4 1. 2. 3. lantern 4. octopus 5. killer whale 6. jellyfish
7. sw Queen man-of-war 9. electric eel 10. barracuda
11. gia sawfish

Page 50: 1. a 2. a 3. b 4. a 5. Place an X in the blanks before A, B, F, H, and J.

Page 53: 1. b 2. b 3. c 4. c 5. a 6. a. sam b. lim c. dif d. rine e. fo f. swim g. spec
h. sub i. ta j. odd

Page 54: Cross out the letters B, G, S, E, A, H, K, R, E, C, V, Y, W, O, N, L, M, and H. The remaining letters spell the answer, BOARFISH.

Page 56: 1. a 2. c 3. a 4. b 5. a. prea´ture b. al low c. up´per d. ap pear´ance
e. at tract´ f. te ta´cious g. po si´tion h. fi ber i. a void´ j. chem´i cal ly

Page 57: ACROSS: 1. to 3. ridge 3. surface 4. fish 5. electric 6. plankton 7. bea
8. gull. DOWN: 1. one 2. shark 4. fin 5. reef 6. starfish 7.
comm 8. kelp

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